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EDITED BY

W. H. DOLAMORE, L.R.C.P., M.R.C.S., L.D.S.

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THE DENTAL RECORD.

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Original Communications.

THE STEAM SWAGER.

By W. R. HUMBY, L.D.S.

No practical dentist can deny the advantage of contour vulcanite work, as secured by the use of the above-mentioned instrument.

Firstly.—To prevent the roughness resulting from the contact of the heated and consequently extremely plastic rubber with the porous rough plaster, the smooth carefully moulded surface of the wax denture being lost when the rubber is substituted (in a plaster investment) for the wax. This is not of so much consequence in the labial aspect of the case, as being convex it is more easily manipulated, but the lingual surface being concave and undulating the smoothing before lathing is impossible except extra bulk be provided.

Secondly.—The hardness and consequent durability is inferior in rubber hardened in contact with plaster.

Thirdly.—The most important consideration of all, the fit in the mouth, if contoured is found to be better, in consequence of the more even distribution of the material of which the plate is composed.

Rubbers contract during the hardening. This shrinkage is proportioned inversely to the amount of colouring materials incorporated with them, and the contraction is directly proportional to the volume of the denture. An uneven plate will undergo uneven shrinkage, uneven shrinking means distortion of the denture and an inferior fit.

This may be demonstrated in the following way:—When an edentulous upper jaw is found where there are no overhanging projections, take the impression in composition, lightly and evenly coat the same with vermilion paint, (such as is used for fitting tube teeth), pour the model in plaster, and as soon as hardening has taken place, but before any warmth or dryness is noticeable, tap the handle of the tray lightly at its attached end with a plaster knife. The impress is loosened, and the latter may be re-poured an indefinite number of times; each time an exact counterpart of the first is obtained.

If to one of the models an even plate is made, and to one of the others the completed denture, the alterations, if any, may be seen by trying both plate and denture on one of the models reserved for the purpose. The ridge of rubber which carries the teeth is the cause of distortion.

By trying both the even plate and denture in the mouth the difference is striking, and especially so where the volume of rubber required for support of the teeth is greater.

Having briefly stated in the foregoing the desirability of isolating the lingual surface of the vulcanite denture from plaster contact during hardening, also the influence distribution of volume plays in regard to the fit of the set of teeth in the mouth, the use of the Swager will now be explained; how it may be utilised to obtain the isolating film, and how to produce the plate by which the even contour of work is secured, and trial plates made. The latter plates may be employed to take the bite, and, after the adjustment of teeth on wax, the plate serves as a means to hold the wax during the final test in the patient's mouth to see that all is correct.

To produce a trial plate, an impression is taken of the plaster model in composition. This is poured in the usual way, but instead of inverting on to the plaster board, the inversion is made into the cast-iron cup which is supplied with the machine. The cup should be soaped, and a piece of string passed through the hole seen at the deepest part of the cup. The level of the most prominent part of the gum should be from a sixteenth to an eighth of an inch below the free edge of the dome. When the plaster is hard the composition is softened and removed. Any roughness between the actual model and cup edge is scraped away and the piece of string is drawn out; this leaves a small hole leading from the free surface of plaster to the outer surface of dome, thus providing a means of exit for air compressed and steam generated by the damp plaster shape being brought in contact with the heated plate. About five ounces of water are put into the boiler, a brown paper washer laid on the edge of the boiler, and the metal is laid on the brown paper. The dome is then placed in position and firmly screwed home; thus the metal is held in place and a steam joint made. The gas is lighted, and in three to five minutes, with a good pressure of gas, the steam will register 60 lbs. to the inch. The gas is then turned off. This pressure is enough to force up one thickness, and the machine should then be enveloped in a damp piece of canvas, the cog which forms the handle of the screw grasped through the canvas from outside, and the machine unscrewed. The steam escapes into the damp canvas and mostly condenses.

Having obtained the first plate a point should be thrust through the hole left by the string; the hole is very plainly indicated by a depression in the plate corresponding to it. Two more plates are inserted, and a pressure of 120 lbs. is applied, when the operation is completed as far as shaping is concerned. The Swager is opened and the plates trimmed to required size with scissors. If any bending occurs it can be remedied by placing the plate on the shape and burnishing home.

The object gained by sending home one plate is a greater intimacy of fit for the first, while for the second and third it is better not to have so close an adaptation.

The first plate should be of extra plastic metal, the last two of the ordinary metal. The latter should also be used for the isolating film. The production of the latter is practically the same as for trial plates, except that only one thickness is needed and the impression is taken from the lingual surface of modelled denture in composition, poured and inverted into cup as before described.

For some years I supplied machines at cost price to dentists making application to me, but the ever-increasing demands of my practice renders such a task no longer possible.

I have, therefore, supplied the Dental Manufacturing Company, Limited, with the patterns, instructions, &c., and for the future they will supply them.

If any difficulty arise in the use of the Swager I shall be pleased to explain matters, or give a practical demonstration in our Laboratory to any registered practitioner.

SOME OF THE USES OF ELECTRICITY IN DENTAL PRACTICE.*

By Mr. Curling Hope.

Mr. President and Gentlemen—

Of electricity, as of most other sciences, it may be said that some knowledge existed even in the earliest times; but the first *practical* use of this agent was initiated in 1776, by Galvani, in the inventions which bear his name. This science, difficult and abstruse to the vulgar mind, has been and is still utilised as the servant of fraud and the handmaid of quackery. This is, however, no reason why a right use should not be made of this good servant though bad master, and its powers not be pressed into our service for the saving of labour and the increase of our manipulative skill.

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*A paper read before the Students' Society, Dental Hospital of London.

The first real step in the use of electricity is dentistry, with the exception of some plating and dipping processes in the workroom, was the invention, in 1875, of the electric mallet, since brought to such high perfection by Dr. Bonwill, an American practitioner, who has shown himself to be possessed of very high mechanical ability. The action of this instrument is very simple. An electro-magnet is placed in such a position as to act on a mallet of iron, which is kept apart from the coils by a small spiral spring. When this mallet is acted upon by the passage of the electric current through the helix of the electro-magnet it taps the end of the plugger, and at the same time breaking the contact of the circuit, it falls back released ; and the blow is again repeated in a similar manner. The mallet is controlled by a small plate on the right side of the instrument, which, when pressed forward by the first finger of the operator, completes the circuit, and thus causes the malleting to commence. A slot on the opposite side of the vulcanite hand-piece enables the manipulator to turn the plugger in any desired direction with the thumb.

The advantages in the use of these instruments—especially in the highly perfected ones now to be found at the dental depôts, are many. It is well known that a sharp tap is the most suitable blow for condensing gold foil, and in this mallet we *have* a smart tap, given directly and with very great rapidity, resulting, if properly used, in a perfect cohesion and great speed of operation. Then again, this great quickness of action makes a hard blow unnecessary, and the control is immediate ; the operator having the power to stop the malleting instantaneously by the removal of his finger. Further, this mallet does not require so much hard work as other forms, and time is saved by the perfect and immediate interchangeability of its plugger points. And now for its disadvantages. Some operators find it too fast in its action, which seems to me to speak badly for their manipulative ability. Others consider the slight noise an objection, and this is doubtless a consideration with nervous patients ; but I am convinced that the main drawback lies in the difficulty of obtaining a really efficient electrical supply. This induced Dr. Bonwill to discard "the child of his own brain," but we must remember that he deserted it only for a younger "child"—the "Bonwill engine-mallet"—a special weakness for the latest-born seeming to be inherent in the human race. The difficulty of supply has now, I think, been almost if not entirely removed. Those who practise in our larger towns have a direct electrical supply, which they are able to utilise by means of a resistance-board; while the improvements in accumulators and the new pattern of Leclanché batteries make the way easier for operators in the smaller provincial towns. Those using accumulators can send them to the nearest dynamos, and have them re-charged at a very slight expense, four or five being sufficient for the motor, of which I shall speak presently.

A modification of the electric mallet, was brought out by Messrs. Ash and Sons, which partook of the principle of the Bonwill instrument, but was reduced to about the size of the Snow & Lewis Automatic Mallet, and was of cylindrical form. It was found however that the recovery spring was spoiled by the excessive jar and the idea has been abandoned. Messrs. Ash and Sons think that with improved machinery the difficulties of manufacture could be overcome; but the demand is not sufficient to justify the laying down of new plant to meet it.

One of the students of this hospital has in his possession an accumulator sufficiently small to be carried in the breast pocket, but which will, however, if properly charged, drive an electric mallet for three hours continuously. A gas-engine and dynamo has been arranged for dental purposes by Messrs. Cuttriss and Wallis which will charge accumulators, and when not required for that purpose will work any lathes or other such appliances if required.

We may now pass on to the consideration of the electric-motor; a machine which has been introduced to supersede the employment of the ordinary dental engine. The one at present principally in use is that of Messrs. Cuttriss, which possesses the advantages of steady motion with a simple arrangement of a clutch action, which stops the bur immediately the foot is taken from the regulator and the contact broken, the motor still continuing to run with its own momentum.

This motor runs quietly in either direction, according to the position of a switch placed at the top, and with a very even power.

It effects a decided saving of labour, and although it has been suggested that these machines tend to frighten patients, this I hardly believe to be the case. In fact, I have been informed by one operator that they have the advantage of pleasing the children. One of the surgeons of this hospital tells me he finds that hardly anyone takes exception to his use of the motor engine; in fact, not so many as object to the ordinary foot engine. Two of his patients, however, must be especially excepted—these being two sisters who will not allow themselves to be approached by any electrical appliance whatever, being evidently afraid that they may be blown up or otherwise destroyed by the all-enveloping fluid.

Another motor, that of Mr. Kirby, has lately been put on the market, and its inventor claims for it great superiority over the Cuttriss motor. It does not require the pedal regulator, being brought into operation by the drawing forward of the hand-piece. It has not the clutch action, but is stopped by a brake, applied by the action of a powerful electro-magnet, which is brought into play by the movement of a stop fixed at the side of the chair. It is much smaller than the Cuttriss motor, and neatly covered in by an electro-plated sheath, and it is claimed that from its construction it can be wound in such a manner as to be used without any resistance, on an electric lighting cable, but a well-known electrician informs me that the sparking would probably be so great as to be trouble some.

With regard to the supply for the motor many primary batteries have been tried, and almost all have proved failures. The best means of supply is undoubtedly the one taken from the electric lighting wires through some medium of resistance.

A very suitable arrangement is the resistance and switch-board of Messrs. Miller and Woods: in which resistance-carbon rods, used in parallels, can be employed for the mallet as well as for the motor from, of course, different attachments for the two cables. A third attachment is also arranged for a small mouth-lamp or cautery. Supposing the supply cannot be obtained in this manner storage batteries will be necessary, and some hope is held out to us of a bichromate battery, now being perfected, which is expected to prove completely satisfactory.

A difficulty has been found in some parts of London, owing to the supply being "alternating." I understand, however, that Mr. Claude Rogers is running his motor (an American one, without the clutch action), from such a current; and that Messrs. Cuttriss are designing a new motor especially adapted for that system.

Of the electric cautery there is not much to be said. A platinum wire is kept at white heat by a current passing through it, and this cautery will, of course, be found suitable in many and varied cases.

Electric lighting inside the mouth is usually managed by means of a small incandescent light placed on a mouth-mirror. The principal fault of the usual designs is that the brilliant lamp is set in such a position as to catch the eye of the operator, and so to a great extent to mar the advantages of increased light; a drawback which could be easily remedied by a small shield screening the light in the desired direction. Outside the mouth the use of electric light is very common in those surgeries where it is comparatively easy to obtain a direct electrical supply. Some practitioners make use of the glass water-globe, and thus passing the light through alum water filter away the heat-rays, and to some extent focus the light on the mouth. Others suspend a focussed lamp in a Telschow reflector, or have their light focussed by various somewhat similar appliances: While not a few trust to a powerful incandescent lamp with a ground-glass cover, and eschew all lenses or reflectors whatever. A form of lamp suitable for use with accumulators, or even with powerful primary batteries, is that of Mr. Leslie Fraser. It consists of a small lamp, on a universal attachment; the wires passing through the tubes of which the apparatus is made. No reflector is used, the lamp, being silvered on one side, acting as its own reflector. Mr. Claude Rogers advises a green shade for use with this apparatus, while others prefer a bull's eye attachment.

There appear to me to be two difficulties in the use of the incandescent electric light. *Firstly:* If powerfully focussed it is apt to be rather hot, especially if the rays fall on the back of the operator's head. *Secondly:* Its brilliancy is such that when using it gold filling becomes rather trying to the eyes. The first of these objections can be met by passing the light through alum water or even water alone; and the second is considerably lessened by giving the light a pale green tinge.

It has been suggested, I think by Mr. Tomes, that a very flat incandescent lamp, having a gridiron-shaped filament, might be used to anneal gold. So far as I am aware, the idea has not at present been followed up, but I believe it to contain the germ of a very useful electric fitting.

In speaking of the Leslie Fraser lamp mention was made of the use of a primary battery, and I think a few words on this subject may not be amiss. Makers of electric batteries very commonly cover them in and seal them up, making as it were, a secret of them. All such batteries should be avoided, and the more humble but honest Leclanché or bichromate used in preference; care being taken with the latter to lift the zincs when the battery is not at work.

We may now turn from the surgery to the workroom, where we find that almost the only use of electricity consists in the old-fashioned method of dipping gold plates. Why should we not plate them with a sheath of fine gold, sufficient to some extent to resist wear. Some time ago, when a pupil, the gentleman to whom I was articled had some difficulty with a patient who complained of a strong coppery taste when wearing her plate. The plate was of the usual 18-carat gold, with 16-carat clasps, and no reason could be assigned for this nauseating sensation. Dipping proved of slight avail, and finally the denture was heavily plated with fine gold. The trouble then subsided and nothing more was heard of the coppery taste of which the patient complained.

Having arrived at electro-gilding, for which I should recommend three or four of the new pattern Leclanché cells or Daniell's constant cells as being simple and cheap to re-charge, why should we not press galvano-plastic operations into our service? Why not drive the lathe by electricity? and thus study the time and convenience of our workmen as we should our own.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Ordinary Monthly Meeting of this Society was held on the 5th Dec. The President (Mr. Howard Mummery) in the chair, and a full attendance of members. The minutes of the previous meeting having been read and confirmed, the President said that it was his painful duty to record the death of Mr. Henry Moon, who took a great interest in the Society for many years, and was, he believed, for three years its Vice-President. He was sure that the members would hear of his death with great regret.

The LIBRARIAN (Mr. ASHLEY GIBBINS) stated that since the last meeting they had received a number of books, the gift of Dr. Dudley Buxton, and had also added to the library by purchase, "Practical Pathology" by Dr. Sims Woodhead, and the "Journal of Pathology and Bacteriology" for 1892, edited by the same author.

The CURATOR (Mr. STORER BENNETT) announced the acquisition of a series of photographs of the beautiful case of French specimens in the museum. He had also received from Mr. Montague Hobson, an upper temporary central gemmated with a supernumerary, while Dr. Oswald Fergus had sent an upper molar having a large abscess on the inner side of the palatal root, just at the junction of the root and the neck, *i.e.*, not near the apex.

Mr. W. BOWMAN MACLEOD said that being in London he had taken the opportunity of bringing with him a specimen of a skull, the property of Dr. Johnson Symington, of Edinburgh. The point of interest in the skull was, not the rarity, but the extraordinary number of ordinary irregularities which the teeth exhibited. On the left side a temporary canine might still be seen standing; then there was a bicuspid inverted, and the eye tooth behind it, the first and second molars were irregular, and in a crypt behind them the wisdom tooth presented the coronal surface to the posterior part of the mouth. He was sorry to say that in transit the wisdom tooth had dropped out of the crypt, but they might take his word that it was originally there. On the right side the same condition of things existed, the coronal surfaces pointing backwards. There was no evidence of a wisdom tooth on the right side, but on shaking the skull one could hear that there was a loose body, either in the crypt or in the antrum. Then hearing that some gemmated teeth were to be presented, he thought that he might bring a few to bear them company. These teeth, he said, spoke for themselves, and there was no necessity for any special explanation. They included an upper molar gemmated with a second molar; also two lower molars in the same condition.

The PRESIDENT remarked that the skull was of very great interest, and he should be glad if they might photograph it.

Mr. G. BRUNTON suggested that a cast might be taken of it.

Mr. BOWMAN MACLEOD said that he would be happy to leave the skull in the care of the Curator, and in the meanwhile would communicate with Dr. Symington, who he was sure would readily give his permission.

Mr. Ackery gave the history of a curious case, that of a lad of 16, now absolutely devoid of all the crowns of the teeth; all the permanent teeth seemed to have erupted. He had been admitted to St. Bartholomew's Hospitial for a difficulty in swallowing, but had been troubled with no such difficulty either during or since his stay there, he was therefore transferred to the dental department and supplied with a complete upper and lower set. The lad was anæmic, but otherwise well and very intelligent, there was no suspicion of syphilis, rickets or struma, nor did an examination of the urine reveal kidney trouble. The mother stated that he was the seventh of a family of nine, all the others being healthy. She herself had an illness some six months before the birth of the boy, who was perfectly healthy at the time of birth, and remained so until ten months old when he had a severe attack of bronchitis. Since the age of 14 he had had a difficulty in swallowing, not only solid but also liquid food. With regard to the first dentition, the teeth did not come through at all until he was twelve months old, and he then cut them slowly. The permanent teeth came through at the usual time, but they were not strong. The lad said that when he once overcame the difficulty in swallowing he was able to get on fairly well until the next attack. The mother mentioned that four years ago he was in the hospital at Cambridge under Dr. Humphrey, but on Mr. Ackery communicating with Dr. Humphrey it turned out that he had not been under his personal care, and that there were no notes of the case beyond merely recording that he was in a weakly and anæmic condition. When Mr. Ackery saw him there were only two teeth in his mouth that were at all worthy of that description, and these were both unerupted, the portions that were above the gum level were decalcified, and he thought it better to remove them. The patient was present and was examined by the members.

The President wished to ask Mr. Ackery if all the roots were present.

Mr. Ackery—As far as he could judge all the roots of the teeth were present. He might say he could get no history of rickets, and there was no evidence of any such condition about the boys frame; he was looking better now than when he first saw him.

Mr. Walter Coffin asked if there was any special action of the saliva?

Mr. Paterson took it that there was no doubt in Mr. Ackery's mind as to causation? The constant regurgitation of the gastric juice had passed through his mind?

Mr. ACKERY in reply to Mr. Coffin said that he had not had many opportunities of seeing the lad under varying circumstances, but when he first saw him in the middle of the day, two or three hours after food had been taken, the condition of the saliva was a little acid, but nothing very marked. With regard to Mr. Paterson's remarks, he would not pledge himself, nor had he come to any very distinct conclusions as to the cause. He had thought that the bronchitis might have produced gastric disturbances, and the saliva might have been acid, or, as Mr. Paterson had suggested, there might have been irritation set up by the gastric juice.

Mr. E. LLOYD WILLIAMS for Mr. T. W. F. Rowney of Derby, showed a specimen of the fusion of the second bicuspid and first molar, the posterior root of the first and the anterior of the second both were fused. The most interesting point was the somewhat rare occurence of cementosis causing absorption and actual perforation of alveolar plate. He would mention that the root of the lower molar had also been sent in order to show the tendency to cemental deposit. The teeth were taken from a clergyman aged 58 who suffered from gout.

Dr. SIMS WOODHEAD then read a paper on

INFLAMMATION IN BONE.

Though the main processes in the inflammation of bone have a uniform type; though the reaction of the cellular elements are the same; though the changes in the walls of the blood vessels are identical, and lead to secondary changes of much the same kind as those met with in other tissues, yet it should be remembered that in bone the proportion of dead or devitalised material to active living cellular tissue is much greater than elsewhere, and that therefore, the effects of inflammation are more evident to superficial examination, both clinically and pathologically, than when any other organ is effected. Further, in consequence of the large quantity of dead material formed by the cells in health, there are much greater possibilities in the way of modification of structure under different inflammatory conditions than when any other part or tissue of the body is affected. The bone derives its nutrition from two distinct sources: (*a*) the large nutritious arteries, which, passing through small canals with hard and undistensible walls, supply the bone marrow and the layers of bone near the centre or medullary canal; (*b*) the vascular network, met with in the periosteum, which affords a rich supply to the outer layers. Hence the clinical and pathological manifestations in areas of inflammation, presided over by these two vascular supplies perfectly independent of one another, can only be brought into line, and regarded as the result of the same processes of inflammation by a thorough study of the essential changes involved. The main phenomena in inflammation are the result of the reaction of the tissue cells to an abnormal stimulus, as will be realised when the important functions of the cell in the process of bone formation are borne in mind. Taking first the bone of an epiphysis, just at the margin of the intermediary cartilage, and examining the homogeneous trabeculæ, it will be found that on them lie a number of small nucleated cells—the osteoblasts or bone-forming corpuscles. In the spaces between the trabeculæ are delicate blood-vessels, the walls of which are also formed of, and surrounded by, small nucleated cells. In very early stages of bone-formation these cellular elements preponderate very largely, but as development advances they appear to form a delicate substance which ultimately takes the form of a homogenous matrix ; then the cartilage disappears, giving way to a more fibrous matrix ; which forms the scaffolding of the bony trabeculæ. In addition to these small cells, both in cartilage and in bone, there are large multinucleated cells, which appear to have a special function in connection with the absorption of bone even under normal conditions, cells which are very similar to the plasmodia, or large absorbing cells, met with, especially in certain chronic forms of inflammation. The periosteum forms a fibrous vascular cellular sheath around the bone, and largely influences the nutrition of the bone substance. The dense fibrous outer layer serves rather as a protecting sheath to the more vascular layer beneath the osteogenetic layer, which latter is composed of nucleated cells arranged in a fibrous matrix richly supplied with blood-vessels. The shape and arrangement of the cells are somewhat modified as they come near the bone, for whilst those near the surface are rounded and comparatively small, those nearer the bone are much larger, and often spindle-shaped. It is sometimes difficult to make out any sharp line of demarcation between the fibrillated matrix and the bone substance. Under normal conditions while the small round cells in the situations referred to probably play a part in forming the matrix substance, the larger multinucleated cells appear to be more intimately associated with the destruction of the bone. It will be found, however, that in inflammation of bone where the small cells are more numerous, apparently as the result of rapid proliferation, instead of laying down a matrix, they acquire a distinct power of absorbing the bone trabeculæ. It was long held by German pathologists that inflammation was associated almost entirely with the changes that occur in the walls of the blood-vessels, while the French school regarded it as due to connective tissue changes, but in truth looked at in its broadest aspect neither view taken alone is complete, for it is known that the walls of the blood-vessels, the lymphatic and connective tissue systems that surround the vessels, the cells lining large serous sacs, the parenchymatous cells of the various organs, the cells lining the alveoli or the bronchial tubes of the lung, the various layers of the periosteum, and the tissues within the bone, may any of them be involved ; in fact, although one set of tissues in any organ may be affected more than another, there is no manifestation of reaction in the one without certain evidence of a corresponding reaction in the others. Inflammatory changes may occur as the result of some noxious stimulus in a tissue entirely devoid of ordinary blood-vessels, just as certainly as it may occur in tissues in which there is no trace of epithelial cells, but if either of these structures is present in an organ, or part, subject to irritation, they will as a matter of course take part in the general imflammatory process. In no tissue does this hold good more completely than in bone, and when the inflammation is acute as the result of injury, followed by the invasion of a pus-forming organism, the changes take place so rapidly that in most cases it is almost impossible to follow their evolution. In less acute inflammation the endothelial cells may be seen undergoing marked change, they swell up, become granular, then more hyaline, and finally undergo division. The surrounding lymph spaces give evidence of the escape into them of a considerable number of leucocytes. Further, the branched cells lying in the lacunæ take on a similar granular and then hyaline appearance ; these changes can as a rule only be observed at the point of junction between bone and cartilage, where, as the calcification is more or less incomplete, it is possible to carry the knife through a few spicules of bone near the margin of the cartilage, and then only in specimens in which the fixing process has been brought about very rapidly. Both in the leucocytes and the proliferated fixed cells there is evidence that they are more motile and also more plastic, and that consequently they can make their way through comparatively small channels and spaces, whilst their voracity, or power of ingesting foreign or dead particles, is increased to an enormous extent. Unlike the normal osteoblasts, which they appear most to resemble, they may often be seen attacking, as it were, the formed fibrous cartilaginous, or bony, matrix ; and some observers have actually described the presence of minute, highly refractile, probably calcareous granules in the substance of these cells. Dilatation of bone spaces into large cavities has been ascribed by many authors to the accumulation of pus, but it can hardly be conceived as possible, unless the migratory and fixed connective cells have the power of gradually absorbing the trabeculæ. The increased tension in bony cavities during inflammation cannot be due solely to enhanced blood pressure ; another purely physical factor, osmosis, or dialysis, also plays its part, the abscess wall practically acting as a dialysing membrane. Dr. Woodhead said that a careful examination of the process compelled the conclusion that the increased tension must in great measure be due to chemotactic action. Although in the centre of every abscess—the result of a specific inflammation—there is well marked degeneration of the tissues, there is always around this a cellular zone, the cells of which appear to have an extraordinary power of devouring all dead or partially devitalised material, and even of taking up such organisms as have exhausted themselves in their attacks on the dead tissues, these devouring cells appearing to have little or no power of discrimination, for just as in the case of formed connective tissues, so in bone, these active cells are to be discovered rapidly disintegrating the formed bony matrix, first appearing to remove the lime salts and then making short work of the matrix itself; on a careful observation of the absorption of bone the irregularly eroded outline against which the cells are directing their attacks would be seen with the clear band immediately in contact with the cells, and beyond this the opaque tissue in which the calcareous salts still remain. Dr. Woodhead then demonstrated by means of excellent micro-photographs his point, that acute inflammation in bone is essentially the same process, and is attended with similar results as is acute inflammation in the soft tissues. The large spaces which are found in bone in acute inflammation in which suppuration has not taken place or has not continued, only afford one of the forms of evidence of inflammation, but they always point to the fact that the inflammation has been comparatively acute, except in old people, when they point to simple excess of the process of absorption over that of bone formation. Most students in pathology have came across bones in which in place of a diminution in the quantity of calcified matrix, there has been apparently a filling up of the normal spaces and the production of a hard dense bone, to which the term osteo-sclerosis as opposed to osteo-porosis has been applied. Next inviting attention to the peculiar solid wedge-shaped infarcts found near the ends of tuberculous bones, he said that they occur most frequently at the ends of long bones near the junction of the epiphyses or immediately under the articular cartilage. Konig describes them as due to infarction, their wedge shape being the result of the cutting off of the arterial blood supply to the small wedge-shaped area, just as in the case of an infarction of the spleen. Thomson and others have raised objections to this explanation, holding that such masses are far more likely to be tubercular sequestra. As he (Dr. Woodhead) has elsewhere pointed out, both processes probably enter into the causation of these pale hard masses. Klein, Watson Cheyne, and others, hold that owing to the tuberculous changes in and around the vessels in the bone there may actually be formed an infarcted area, but that in some cases there is no evidence of any primary tubercular process beyond the infarction itself; Dr. Woodhead is of opinion that a probable explanation is, that the osteoblasts and other cells first proliferate as the result of slight irritation, and then, in consequence of further stimulation they die in situ; they then become swollen and hyaline, and rapidly become infiltrated by lime salts. The tendency to calcification in degenerated areas, which is so marked wherever there is slow degeneration in any tissue, is still more marked when such degeneration is going on in the cells in the bone canals. Dr. Woodhead regards calcification itself as evidence of degeneration. It can scarcely be imagined, he said, that the tubercle bacillus can go on forming a fresh membrane within the old membranes, distending these latter after they have become calcified, but it could readily be understood how the tubercle bacillus, acting on the protoplasm of the cells in its immediate neighbourhood, deprives it of its vitality, and converts it into what, to all intents and purposes, is a dead membrane, through which, however, dialysis may take place, and in which the lime salts may be readily deposited; these membranes, one would say, are far more probably formed outside the old layers as successive dead layers are produced, each one offering a temporary protection for the living protoplasm against the action of the bacillus. As the layers become increased in number, the bacillus cut off from its food supply, a free exchange of nutrient material and effete products no longer being carried on by dialysis, the organism dies, the process of membrane, dead tissue or degenerative tissue formation stops, and calcification becomes complete. Wherever this has taken place it is impossible to make out by any staining actions at our command, any trace of living protoplasm of the bacillus in the centre. This offers, Dr. Woodhead thinks, a very beautiful explanation of certain of the facts connected with tubercular inflammation in bone, and is of opinion that the process of osteosclerosis—a somewhat clumsy term, but one which indicates the kind of process which takes place in very chronic forms of syphilis, and in certain other diseases—may also be explained, on the theory of irritative inflammatory degeneration. In examining this process of calcification in chronic inflammation, it must always be borne in mind that we have a mass of active cellular elements, with which the blood and lymph are constantly coming in contact; the fluids are the carriers from which the cells obtain their nutrient material; they are the vehicles by which effete matter is removed, and as a matter of fact it has been found that in the neighbourhood of all active cells, these fluids differ very markedly in their composition from the general fluids. For example, there is always an increase in the amount of free carbonic acid in the fluid near these cells, and we have a formation of phosphate and carbonate of lime, the latter in comparatively small amount. In the neighbourhood of dead membranes, if these salts are removed at once by dialysis, they remain stable and may be deposited at once, but if they are allowed to remain in contact with the phosphoric acid of the blood and the alkaline phosphates, they are re-dissolved, and are returned to the general fluid circulation. This primarily bears on the process of calcification of bone. The osteoblasts lay down a matrix of formed material; the more active the cells within certain limits the greater the relative amount of matrix. This matrix may be looked upon as inert or dead organic matter, playing the part of a dialysing membrane that serves to separate the lime salts prepared in its immediate neighbourhood by the carbonic acid forming cells, this carbonic acid causing a precipitation of phosphate of lime, with a small proportion of lime in which the phosphoric acid is usually replaced by carbonic acid. The three elements necessary for calcification are, Dr. Woodhead concluded, (1) tissue thoroughly devitalised containing albuminoid matter; (2) a layer of formed material, and (3) the layer of proliferating cells, whose most important functions as regards calcification perhaps is the generation of carbonic acid. It might be taken then, that in all inflammations of bone the ultimate changes depend upon the character of the inflammation through the action of certain irritants on the cells, and these vary in the effects they produce, first, according to the intensity and nature of the irritant, and secondly, on the strength or power of resistance of the tissues or cells on which the irritant acts, *e.g.*, in acute inflammations there is a rapid stimulation of cells and all the effects of abscess formation ; death of certain of the cells ; increased activity of others, in consequence of which not only bacteria and their products, dead cells, and the like, but also lime salts and bony trabeculæ, are gradually or rapidly devoured. In more chronic forms of inflammation in place of this rapid digestion of the trabeculæ there may be an increased formation of bone, especially in those areas slightly removed from the irritative foci ; certain of the cells undergo marked degenerative changes as the result of the irritant material secreted or excreted by the specific organisms, and in these dead cells a certain deposition of lime salts takes place, which appears to account for the extreme density of bone in such diseases as chronic syphilis and tuberculosis.

The PRESIDENT remarked that he was sure that all had listened with the greatest pleasure to the most interesting paper, and invited discussion.

Mr. H. BALDWIN wished to ask how much there is proliferation accounting for the enormous number of cells? He thought that the latest teaching was that there was no proliferation at all, until the activity of the inflammation had passed away, and then the original tissue cells proliferated only with a view to repair.

MR. F. J. BENNETT enquired whether Dr. Woodhead considered the loss of nutrition in the intercellular substance of the calcified cartilage trabeculæ was the cause of the calcification of this intercellular substance, previous to its absorption ?

MR. C. S. TOMES said that it was rather difficult to discuss a paper such as that read on a short notice and without careful reading, but he should like to amplify MR. BENNETT'S question, was normal calcification to be regarded as deposition of calcareous matter in dead material as matrix ? There was one little difficulty which passed through his mind, that is, in one's knowledge of bone, more especially of dentines, one always finds that any dentine that is to last through a considerable part of the life of an animal is very freely penetrated by fine canals, while dentines which were less penetrated with few vascular canals, and no fine tubes occurred in almost every instance in teeth which were cast off in a short time and were being constantly replaced by new ones ; so that it would seem that dentine which is to last any length of time must be penetrated with a copious tube system. That did not quite jump with the idea that all the calcification is within dead sort of tissue. Another point was, if the matrix of bone prior to, and after, the deposition of lime salts is dead tissue one wonders at the tolerance shown by contiguous tissue to absolutely necrosed bone. He seemed perhaps to be fighting the air, but he was giving utterance to what was passing through his mind whilst the paper was being read.

THE PRESIDENT thought that this view of the deposit of decalcified material might have some relation to the secondary deposits in the pulps of teeth which are the seat of some degenerative process.

MR. ROUGHTON asked if Dr. Woodhead had at any time observed the large number of multi-nucleated cells taking part in the formation of new blood vessels? Cells precisely similar in appearance might be seen in the subcutaneous tissue of rats, developed into capillary blood vessels. He had had the opportunity of observing similar cells in sections of myeloid sarcoma of bone.

MR. W. HERN remarked that in cementum of the roots of teeth—a body very similar to bone—depositions of fresh calcified material frequently occurred causing exostoses. The new deposit, however, always occurred on living portions of cementum, and never on dead portions.

MR. W. B. PATERSON wished to join a question to that of Mr. Roughton's as to the giant cell or absorbing cell, how did Dr. Woodhead account for the development of the giant cell ? Did he think it a leucocyte in the first instance ? Did he think it grew at the expense of the tissue it ate, or did he think it a cell which had a connection in destroying tissue, not by absorbing and growing at its expense but by secreting the acid ? On the question of abscess tension he was somewhat mixed, as he followed Dr. Woodhead he understood him to say that this tension was not mechanical, but he presumed Dr. Woodhead was referring to it in some other way than that which they recognised as the tension which in all abscesses caused pain, and which did seem to be of a mechanical nature. He (Mr. Paterson) understood that the pus is dialised through the cells of the abscess walls so-called, and makes towards the centre, if there be at the centre some foreign matter or irritant.

Dr. Woodhead in reply said, in answer to the question as to proliferation, he had at one time believed that the process was entirely due to the passing in of leucocytes, and of course that was Cohuheim's teaching, but they must look upon the cells in any position as part of an inflamed area being irritated, and as they knew that with any irritation proliferation took place. He had tried to follow the history of these cells in various positions in the abscess, and although the leucocytes play perhaps the most important part in early stages, there was undoubtedly proliferation in connective tissue cells; they first of all lose their irregularity or their branching processes, at least the protoplasm seemed to be drawn in, and then undoubtedly a proliferation of the cells took place. Of course, in the later stages they knew the connective tissue cells played a most important part; they played the part not only of scavengers, but by them the new tissues were built up; but even in the initial stages they always found that the connective tissue cells by proliferation took part in forming the blood of the new cells at the point where the abscess occurred. These cells could not ordinarily be distinguished in the centre of the abscess, but at some little distance from the margin it was possible to distinguish them, and at the margin of the abscess are found the connective tissue cells and the fixed cells generally retaining their normal characters. In the later stages they played a much more important part, they then took on the functions which are associated with repair; they assume a regular form and altogether overshadow the leucocytes. Then as regards the giant cells, he had been asked if he had seen them in connection with the formation of vessels in bone; he had not noticed this in bone, and it was an exceedingly interesting fact to be able to demonstrate this in connection with sarcoma; and as having special relation to the formation of cascular areas of the giant cells, he should very much like to see these. Then, as regards Mr. Tome's question in connection with the dead cells, he (Dr. Woodhead) looked upon the matrix if not as dead as practically devitalized tissue, it was no longer tissue which played any active part in connection with the body. With regard to the question of the formation of cementum, he thought it was quite possible these canals played a most important part in determining the process of deposition in dead bone, because one knew that in dead substances the quantity of decalcified material is exceedingly small. In order that it might be precipitated in a finer condition and through a much denser condition, because in a large area and in connection with the large membrane around a large quantity of dead matter one always found it as coarse calcarious particles; whilst in the cementum they had the lime salts deposited as the result of a slow separation by the fine films of protoplasms, and precipitated in a fine organic membrane. These channels with their contained processes, appeared to him to play an important part in taking the lime salts away from the organic matter in which they could be held in solution. As regards the giant cells, wherever one had a large area to be nourished rapidly and thoroughly, that is, where protoplasm had to take up nutrient material rapidly, it is also supposed that these plasmodia are more active in taking up foreign material than individual cells are. With regard to Mr. Paterson's question, he wished to say that the tension in an abscess was not brought about by any mechanical process. Then as regards dialysis also, he looked upon it as playing a comparatively unimportant part; it was not merely a question of dialysis, but of the cells coming from the outside towards the centre, and he therefore looked upon it as not merely a process of dialysis, but one involving something very much more.

The PRESIDENT having announced that the next meeting would be held on January 9th, when he would deliver his Valedictory Address, and Mr. Roughton would read a paper on "Micro-organisms of the Mouth," the usual votes of thanks concluded the meeting.

The Students' Society of the Dental Hospital of London.

ORDINARY GENERAL MEETING, held December 12th, 1892, W. B. PATERSON, Esq., F.R.C.S., President, in the chair. The minutes of the previous meeting were read and confirmed. Messrs. Bridge and F. W. Jones, were elected members of the Society.

On Casual Communications being called for, Mr. Mellersh showed a plaster model with a supplemental lateral on either side of the mouth, between the second incision and canine. Some discussion then took place on the subject of the missing incisor. Mr. Hope referring to the model shown, suggested that they were the missing third incisors, and Mr. Colyer in speaking of supernumerary teeth found behind the centrals, thought that at some future time they would be looked upon as missing teeth from the permanent series, and he also referred to a model he had seen, showing six bicuspids in the upper jaw. The President in referring to the missing incisor, thought that if more microscopical investigation were carried out in the matter of the dentinal germs developing in the jaws of young fœtuses, our knowledge might be increased. He remarked upon the good incisor shape of the supernumerary teeth of the specimen. On being asked if there were any abnormality about the roots of these supernumerary teeth, Mr. Mellersh replied that he had found none.

Mr. G. Northcroft then gave notice of a motion, that he would bring forward at the next meeting respecting Bye-law XXI. of the Society.

Mr. Prideaux also gave notice of a motion to be brought forward at the next meeting respecting Bye-law XXXII. of the Society.

Mr. J. F. Colyer asked if members of the Society, would kindly loan some of their microscopical sections to the British Dental Association at their next annual meeting, remarking that great care would be taken of them, and added that, if possible, some of their " Fads and Wrinkles " might also be placed at the disposal of the aforesaid.

The President said that the models of regulation cases lent by the Society at the last meeting of the British Dental Association, held at Manchester, had been found valuable additions, and fully appreciated ; he suggested that a sub-committee be formed on the subject, and advised that the "Fad and Wrinkle department," be helped by the Society if it could.

Mr. J. F, Colyer then proposed the following members, with with power to add to their number :—Messrs. Northcroft, Gabell, Parris, Simonds, Moseley, Prideaux and Freeman.

Mr. Northcroft then proposed, that Mr. J. F. Colyer be chairman of the sub-committee, the President, however, ruled that the chairmanship rested with the committee.

The President then called upon Mr. Curling Hope to read his paper on " Some of the Uses of Electricity in Dental Practice." (See page 3).

Mr. Northcroft in rising to open the discussion, said that he was sorry that his knowledge of electricity was so small, and in that respect he feared he could not do Mr. Hope justice by criticising his paper, he however congratulated him upon the subject and thanked him for the value of the paper. In speaking of the various mallets, he said Dr. Bonwill made with the electric mallet strips of gold cohere to such a nicety that when rolled out the mass was found to be perfect and without a sign of a perforation mark, he could not account for the coppery taste of the gold and politely remarked that some mistake must have occurred.

Mr. Mellersh spoke about the electric chair, and told a story of student who had tried an extraction by its means and whose account of the operation was that "it nearly killed him," he also described the process of placing a silver coin on one side of the mouth and a piece of zinc on the other, the patient then rinsing the mouth with slightly acidulated water, this was, he supposed, one of the earliest examples of electricity applied to the mouth. He could not speak of its value in extraction.

Mr. Moseley stated that the first electric chair was brought out about the time of the first number of the journal of the British Dental Association; he had read some account of it. In speaking of the accumulators he said that he had found that they leaked their electricity.

Mr. J. F. Colyer agreed with the last speaker's statement concerning the leakage of accumulators, and advised that after use they should be disconnected. For the use of the electric mallet, he had personally found the accumulators to be the best motor power, he remarked that he did not care for the electric mallet altogether, for it was not applicable in inaccesible cavities, *e.g.*, distal canine and bicuspid cavities, which he thought should be filled by hand pressure and the aid of the mirror, at the same time in accessible cavities he preferred the electric mallet, as with it gold of 96 thickness even could be used. He advised students to read Ottolengui's new book, especially the portion concerning the cutting out of cavities. In conclusion he wished that Mr. Hope had said more about the electric light in the operating room and also of Mr. Kirby's motor.

Mr. Nicol thought that the difficulty concerning the glare of electric light could be got over by means of applying hydrofluoric acid to the glass, thus giving it a frosted appearance when washed off, or by using a green fluid or colored glass through which to transmit the light, he also remarked that he preferred the sodium bichromate battery to the bichromate of potash, as it was of greater motor power and more lasting when once charged, besides being cleaner to handle from the abscence of crystallised material.

Mr. WHITTINGTON explained that extraction by electricity had been tried in the following manner, the patient grasped two handles from a battery, affixed also to the forceps was another wire from the battery which when applied to the tooth completed the circuit, but the current, he had however heard, was more painful than the extraction.

Mr. EVANS also stated that his father had undergone a similar operation and had experienced the same result as that described by Mr. Whittington.

Mr. D. P. GABELL believed that electric mallets were always getting out of order, and wished that more had been said of the use of electric light in diagnosing antral cases.

Mr. J. F. COLYER claimed it to be a mistake that the light had failed in diagnosing antral cases, and explained that Mr. Barrett's failure in one case to detect pus, before mentioned in Odontological Society's Transactions, 1892, Mr. Mark Howell having opened the antrum and demonstrated pus was due to the fact that both antra were diseased, that the light thrown through one was of little value as used, as the other was full of pus.

Mr. CARL SCHELLING remarked that the president had used the light at St. Bartholomew's Hospital, and asked for information as regards its use in diagnosing cases, and also his experience of extraction with the electric apparatus he also had there.

Mr. LOVE in referring to the coppery taste, mentioned that it was sometimes thought that gouty patients detected this taste while wearing gold plates.

Mr. NICOL wished to know how antral cases were diagnosed by means of the light and the method by which this was done.

THE PRESIDENT explained that a strong light was thrown from the inside of the mouth through the bones and cheek tissues, and it was observed from the outside, whether transparency or opacity existed and demonstrated the absence or presence of pus. A perfectly dark room was needed. Another way was to throw a strong light in a tube applied the outside of the cheek through the tissues.

Mr. J. F. COLYER mentioned that the electric light was valuable in detecting dead teeth, as had been mentioned by Mr. Underwood in the Odontological Society's Transactions.

The PRESIDENT, in concluding the discussion, remarked that he had personally not been very successful in detecting dead teeth with the electric light and other strong lights that he had used in darkened rooms. In further reply to Mr. Schelling, he could only say that his experiments with the electric apparatus alluded to by Mr. Whittington, had been of a character similar to that mentioned by previous speakers, viz.: quite unsuccessful. He explained the working of the apparatus in detail, and the results it produced, and mentioned that the theory of its use was that the number and intensity of vibrations produced by the electric current upon the nervous system and nerves in question, being greater than the ordinary vibrations of a sensory nerve when in action, the ordinary sensation of nerve pain resulting from extraction, was superseded by an electric sensation of another kind, which he felt bound to say was, in his experience, the worse to bear of the two. With reference to electric motors, he advised members to see Cultriss's and Mr. Kirby's motors, and not to be in too great a hurry for the moment. He presumed the new primary battery referred to as likely to supersede all others, was not yet in working evidence of that state of affairs, and observed that he had heard of such threatened wonders before. He objected to the use of the electric light in lamp form in the cavity of the mouth, for it was certain he said, if used much and for long, to produce blindness or impaired vision, just as in the case of glass workers, from similar use of strong light in working molten glass. He briefly spoke of the use of the electric cautery, and then called upon Mr. Hope to reply.

Mr. Curling Hope in rising to reply, said he thought that Mr. Northcroft had already been answered, and he would not add any more on that subject. Mr. W. W. Gabell had suggested that a practical invention introduced before any other had been omitted from his paper. He could only say that, after what had been said by various gentlemen present, it seemed evident that if it was anything the electric chair was unpractical, and perhaps it smacked of the type he had suggested as being used as the servants of fraud. Mr. Mellersh had asked the number of volts necessary to drive the motor. He was of the opinion that four or five of the ordinary accumulators were necessary for the Cuttriss motor, three or four sufficing for that of Mr. Kirby, the accumulators being charged at two volts. He quite agreed with Mr. Colyer that the electric mallet was most suited to easily accessible cavities, but he thought that was true of engine mallets and other instruments of the same class. The president had asked whether the bichromate battery mentioned by Mr. Nicol was the same as the one which had been mentioned in the paper. He thought it unlikely, as Mr. Nicol had told them the composition of the cells, and no one but the inventors knew anything about the new modification of which he had spoken. They had heard so much about bichromates that when something better was promised, they did not expect too much. The president had remarked that a light in the mouth would be bad for the eyes, and liable to hurt the patient's tongue, as the globe got very hot. He thought in the first place that fog was more detrimental still, and with regard to the heat he had suggested a small shield. With regard to electric extraction, the idea on which it was founded was, that the nerves had the power to conduct vibrations up to a certain point, and if that we were exceeded the nervous system would be stunned. It had evidently been forgotten that a vibration in accord with the higher one might take place in the same way, that similar musical effects are sometimes produced. He wished to thank the president and gentlemen present for the kind attention which they had so considerately given him.

The PRESIDENT then proposed a vote of thanks to Mr. Curling Hope for his paper, and to Mr. Mellersh for his casual communication, and announced that the Annual General Meeting would take place on January 16th, when Mr. Mellersh would read a paper on "Gold." The proceedings then terminated.

Dental News.

DENTAL ASSOCIATION OF VICTORIA.—The ordinary Council meeting was held on Thursday evening, the 15th September, 1892, at 8 o'clock; the president (Dr. Springthorpe) in the chair, and Messrs. Iliffe, Dillon, Kernot, Mallet, MacIntyre, and Reeve were also present.

The minutes of the preceding meeting were duly read and confirmed.

The president (Dr. Springthorpe), vice-president (Mr. Iliffe), and hon. treasurer (Mr. Reeve) thanked the members of the Council for having unanimously elected them to the positions of President, Vice-President, and Hon. Treasurer respectively.

A letter from the editor of *The Chemist and Druggist*, referred to the Association from the Dental Board, calling attention to the probability that men who have been registered in Victoria as practising dentistry in conjunction with pharmacy would be unable to secure registration in Queensland if the Dental Bill were adopted, was read. Mr. Reeve moved that the letter be received, and that a reply be sent that in the opinion of the Council the time was not ripe for considering the question of intercolonial reciprocity of registration. [The Dental Act of Queensland has since been rejected by Parliament].

Mr. Reeve advised the Council that in consequence of an invitation received from Mr. Morton Smale, Dean of the Dental Hospital of London, he proposed visiting London to attend a course of lectures on dental mechanics during the ensuing winter at that hospital. His absence would entail his resignation of the position of Hon. Treasurer. Mr. Iliffe moved that Mr. Reeve's resignation as Hon. Treasurer be accepted with regret, and that leave of absence from the Council be granted to him for eighteen months, and that letters credential, under seal, empowering Mr. Reeve to represent the Association in all official dental circles during his absence, be granted. Mr. MacIntyre seconded Mr. Iliffe's motion, which was carried unanimously. Mr. Reeve suitably acknowledged the honour conferred on him.

A letter from Mr. Arthur Hoby, chairman of the Dental Board of Examiners, Wellington, New Zealand, with regard to dental education and registration in New Zealand, was referred to the Dental Board.

Mr. MacIntyre moved that Mr. F. H. Baker, dental surgeon, of Richmond, be appointed to fill the vacancy on the Council caused by the resignation of Mr. L. A. Carter, D.D.S. Mr. Dillon seconded the motion, which was carried unanimously.

It was decided to fill the vacancy in the position of hon. treasurer at the next meeting of the Council.

Correspondence was read and minuted, and the Council adjourned.

THE DENTAL BOARD OF VICTORIA.

The ordinary monthly meeting of the Board was held on Friday evening, the 23rd September, 1892, at eight o'clock. Present—Dr. Turner, President, in the chair, and Messrs. L A. Carter, D.D.S.

J. George, J. Iliffe, F. A. Kernot, and Dr. Gresswell. The minutes of the previous meeting were read and confirmed.

APPLICATIONS FOR REGISTRATION.—E. T. Jones, under section 55 of the Act. He forwarded articles of indenture which had been duly completed with Mr. R. A. Cooper, dentist, of Melbourne. Mr. E. T. Jones appeared in person. Mr. George moved that the applicant be registered subject to the payment of the registration fee. Dr. Carter seconded. Carried. J. A. Blackett, of Williamstown, under section 55 of the Act. He forwarded articles of indenture with Mr. E. W. Morgan, dentist, of Melbourne, which had been duly completed. Mr. Blackett appeared in person. In reply to a question, Mr. Blackett stated that his reason for not applying for registration immediately on the expiry of his indentures was that he was not twenty-one years of age at the time. He had in the meanwhile been to Philadelphia, U.S.A., and obtained the diploma of D.D.S. Dr. Carter moved that Mr. Blackett be registered. Mr. Iliffe seconded. Carried. Robert Dunn Cuscaden applied for registration on the ground that he was registered in the United Kingdom. Mr. Cuscaden appeared in person, and made a statutory declaration that he was the Robert Dunn Cuscaden who appeared on the British Dentists' Register of 1889 as a licentiate of dental surgery of the Royal College of Surgeons of Ireland. Dr. Carter moved that the applicant be registered. Dr. Gresswell seconded. Carried.

THE MODIFIED EXAMINATION.—The examiners at the recent modified examination, held on the 10th, 12th, and 14th September, reported that they had passed candidates numbered 2 (Mr. J. H. Taite) and 3 (Mr. W. D. Macgregor). The examiners also submitted the following table, showing the complete results of the examination :

STUDENTS.	GENERAL SURGERY AND ANATOMY.	DENTAL SURGERY AND ANATOMY.	MECHANICAL DENTISTRY.	RESULT.
1.	N.	N.	N.	Not Passed
2.	P.	P.	P.	Passed
3.	P.	P.	P.	Passed
4.	N.	N.	N.	Not Passed
5.	P.	P.	N.	Not Passed
6.	N.	N.	N.	Not Passed

Mr. George moved that the report of the examiners be adopted. Dr. Gresswell seconded. Carried. Dr. Gresswell moved that the questions of examination be now published. Mr. Iliffe seconded the motion. Motion carried. Mr. Kernot suggested that in future spelling and grammar should be taken into consideration at all examinations before the Board.

CORRESPONDENCE.—Letters requesting information with regard to apprenticeship and registration were received from Mr. J. W. Smith, of Footscray, and Mr. W. T. Shanasy, of Mount Gambier, S.A. The registrar reported that he had replied to the letters. A letter referred from the Dental Association, relative to dental education and registration in New Zealand, from Mr. Arthur Hoby, chairman of the Wellington Board of Examiners, was received and discussed. Mr. Iliffe moved that the registrar be instructed to write to the registrar of the University of Dunedin requesting full particulars of the course of dental education and registration, and matters pertaining generally to the Dental Act in New Zealand, also that Mr. Hoby be thanked for his letter, and supplied with the information which he on his part desires. Mr. George seconded. Carried.

The Meeting then adjourned.

THE MODIFIED EXAMINATION under the dental regulations was held by the Dental Board on the 10th, 12th, and 14th September, at the Melbourne Athenæum. Six Students presented themselves for examination, and of these two—viz., W. D. MacGregor and J. H. Taite—were successful in passing. The following are the questions given :—

MODIFIED EXAMINATION.—SATURDAY, 10th SEPTEMBER, 1892.

MECHANICAL DENTISTRY.—Time allowed, two hours.

Examiners—Messrs. L. A. Carter, D.D.S., and F. A. Kernot.

1. Mention all the gaseous fuels you are acquainted with. Give the processes by which they are manufactured. What substance causes the luminosity of a carburetted hydrogen gas flame? What effect is produced by adding air to a carburetted hydrogen gas flame?

2. A gold solder is composed of 6 oz. pure gold, 2 oz. pure silver, 1oz. pure copper. Find the carat and show the method by which you obtain the result.

3. Describe the process you would adopt to obtain pure silver from British silver coin.

4. Name the advantages and disadvantages of using metallic clasps to support partial dentures.

5. Of what is Babbits metal composed as used for dental purposes? What is it used for? Give the process by which it is manufactured.

6. Name all the metals used for making dies and counter dies, mentioning the conditions under which you would use them.

7. Describe the method you would adopt to make a lower gold bar denture for a mouth where the lower molars have been removed.

8. Describe how you would vulcanise a denture that contained a large mass of rubber.

9. How would you proceed to get a "bite" of an edentulous mouth? Name some of the causes of failure to obtain correct articulation.

10. Describe in detail the process you would adopt to "crown" an upper central incisor tooth, using an ordinary plate tooth.

Dental Surgery and Pathology.

Examiners—Mr. Iliffe and Mr. Reeve.

1. Describe the accidents which may accompany the operation of extraction.

2. Describe the treatment for severe hæmorrhage after extraction, locally and constitutionally.

3. What is an anæsthetic? Name the most useful in dental operations, and why.

4. Define the pathology of dental caries.

5. Define alveolar abscess.

6. Describe the process of filling teeth.

Dental Anatomy and Physiology.

Examiners—Mr. Iliffe and Mr. Reeve.

1. Name the bones comprised under the heading "Dental Anatomy," and their articulation.

2. Name the muscles brought into use by the act of mastication, and their attachments.

3. Give number and names of the teeth of first and second dentition, and the normal period of eruption.

4. Describe the process of second dentition.

5. Describe the anatomy and physiology of a human tooth.

6. Describe how vitality is given to the teeth.

GENERAL ELEMENTARY ANATOMY AND PHYSIOLOGY.—GENERAL ELEMENTARY SURGERY AND PATHOLOGY.

Examiners—Drs. Springthorpe and Gresswell.

Time allowed, three hours.

1. ANATOMY. (Three questions must be answered.)—*a*, Give the course and distribution of the facial nerve. *b*, Describe the structure of the heart. *c*, Enumerate the muscles attached to the lower jaw. *d*, Describe the structure and functions of the diaphragm. *e*, Give the relations and the functions of the epiglottis.

2. PHYSIOLOGY. (Three questions must be answered.)—*a*, Give the main branches and functions of the pneumogastric nerve. *b*, What are the main factors concerned in the circulation of the blood? *c*, Describe salivary digestion. *d*, Describe the relations between good teeth and sound digestion. *e*, What are the main classes of food? Give examples.

3. SURGERY. (Two questions must be answered.)—*a*, What are the different kinds of bleeding? How are they arrested? *b*, What do you know of osseous tumours? *c*, How do you keep your instruments aseptic?

4. PATHOLOGY. (Two questions must be answered.)—*a*, How do you distinguish between an epileptic attack and an attack of syncope (fainting fit). *b*, How would you treat a case of suspended animation during nitrous oxide anæsthesia? *c*, What are the causes of neuralgia?

ODONTOLOGICAL SOCIETY OF VICTORIA.—The monthly meeting of the Odontological Society of Victoria was held at the Athenæum on Thursday, the 22nd September. The president (Mr. J. Iliffe) occupied the chair, and there was a very fair attendance of members. After the ordinary routine business had been transacted several anomalies and cases of interest in practice were presented for consideration under the head of "Casual Communications," and following this a paper was read by Mr. Clarke entitled "Extraction with Regard to Orthodontia." A discussion on the opinions expressed and points made by the author of the paper followed.

The Harvard School of Dentistry.

A meeting of persons interested in the erection of a new building for the Harvard Dental School, was held in Horticultural Hall on November 30th, and was largely attended.

President Eliot in calling the meeting to order, explained that the design of the meeting was to arouse public opinion on behalf of the Harvard Dental School, which needed a new building.

" The object of this meeting is to increase public interest in the work of the dental department of Harvard University. The school wants a good building, designed especially for its use and in a suitable position not far removed from the medical school. It has no means of obtaining such a building except by arousing the interest of the public in the work of the profession and the school. Now, people who are urged to promote that object will naturally ask a fundamental question—namely, what public good does skilful dentistry do? Let me try to answer that question.

" In the first place, it stops pain, prevents pain and removes the apprehension of pain. That is a great service to human kind. Constant pain is very rarely compatible with happiness, and the mere dread of it goes far to make people miserable. If preventive medicine were half as successful in mitigating and preventing disease as dentistry is in allaying and preventing pain, the sum of human misery would be greatly diminished. Educated and prosperous people know so well how much wretchedness can be averted by good dentistry that they habitually take for themselves and their children all the precautions that skilful dentists can prescribe. Many of the less educated and poorer classes suffer torments year after year from neglect of dental precautions, particularly in the rural districts where good dentistry is hard to get. It is one of the most marked distinctions between the well-to-do and the poor that the well-to-do keep their teeth and do not suffer much with them, while the poor frequently suffer prolonged torture with them and lose them early.

" In the second place, good dentistry supplies available substitutes for the natural teeth when lost, thus prolonging the capacity to eat various foods and preserving the outline of the face, and the power of clear enunciation. It thus contributes to maintain and prolong the vigour and serviceableness of multitudes.

" Thirdly, modern dentistry goes much beyond operations on the teeth. It is nowadays well understood that many bodily disturbances may proceed from the teeth ; thus, headache is often caused by defects or obscure inflammations in the teeth. The specialist in nervous diseases is often able to declare to the patient that it is not his treatment that is wanted, but the dentist's.

"Dentistry treats fractured jaws and cleft palate. I was at my desk one evening at home when I was told that a stranger wished to see me in the hall. The man made some commonplace remarks about the weather and the crowded state of the Cambridge cars, but broached no matter of business. I said to myself, 'You have a slight foreign accent, though you look like a native.' At last I said to him, 'What do you want?' To which he promptly replied, 'I want you to hear me talk.' Now, I have had a great many interviews in which that seemed to me the real motive of my interlocutor, but no one had ever confessed it before.

"Rather surprised at his frankness, I asked him what his occupation was, and he replied that he was a tinman. Then it flashed into my mind that some months before one of the instructors in our dental school had told me that he had had a remarkable success in providing an artificial palate for a tinman : so I asked my new acquaintance to take out his palate. He promptly did so ; and I could not understand a single word he said until he replaced it. That man knew well that good dentistry means something more than extracting teeth or even than stopping holes in them with various cement and metals.

"It is a great mistake to suppose that a good dentist is nothing but an ingenious mechanic. He must have manual skill to be sure ; but he must also have a great variety of knowledge concerning the human body in health and disease, and he needs the quick perception, tact and good manners that come with general cultivation of the mind.

"The Harvard Dental School has now been in existence twenty-four years, and during all that period has been steadily raising its standard and expanding its instruction. It demands an examination for admission, three full years of study and thorough examinations for graduation. At first, and for several years, the instructors in the school were well-known men taken from the profession in Boston ; but latterly the instructors, with the single exception of the dean, Dr. Chandler, whose connection with the school dates from the year 1869, have all been graduates of the school, as well as practitioners of established repute.

"The school began without the least endowment, and had to hire the bare rooms, in which instruction was first given. Later it borrowed money to buy a house—a transaction which ultimately caused it the loss of several thousand dollars. For the past few years it has enjoyed the hospitality of the medical department of Harvard University, occupying some rooms in the old medical school in North Grove street. To-day it has an endowment of about $22,000 and a gross income of about $14,000. It is out of debt, and is self-supporting ; but it has no building of its own, and its operating rooms and laboratories are but ill suited to these uses.

" It is remarkable among the departments of the University for the number of its foreign students. Last year there were eight foreign students out of a total of fifty-one. Year before last there were twelve foreigners out of fifty-four students—this year nine out of fifty-four. In some years the Dental School has more European students than all the other departments of the University together. They are drawn to it, of course, by the excellence of its instruction and the prestige of its degree.

" Still from another point of view the Dental School deserves well of this community. It has maintained for years a dental infirmary in which thousands of patients are annually treated under the direction of expert instructors, and without any charge except the cost of materials. This is a great charity—a means of relieving and preventing pain for thousands of persons who would otherwise be unable to secure proper treatment.

" I submit that it is now time that a helping hand should be extended to the school by the community it has so long served. The alumni of the school have stoutly supported it from the beginning ; they have taught in it gratuitously or with the smallest salaries ; they have themselves contributed a considerable portion of its small endowment ; they are prepared to make further sacrifices for its advancement. They now ask the help of the public in providing for the school an adequate building—a building containing spacious lecture rooms, laboratories and operating rooms, and furnished with every appliance for the best possible dental work. If the devotion of its teachers, the zeal of its alumni, the high standing of its degree, and the general usefulness of the institution to the community constitute a good claim on public-spirited citizens and friends of thorough professional training, then the Dental School has a good claim for generous and hearty support in its new undertaking."

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Royal College of Surgeons, England.

The following Gentlemen having passed the necessary Examination, were, at the Ordinary Meeting of the Council, admitted Licentiates in Dental Surgery :

Allworth, Frank Parnell	Parliament House, Peckham Rd.
Apthorpe, Samuel Ralph	Walcot, Blyth Rd., Bromley, Kent.
Baly, Charles Francis Peyton	140, Harley Street, W.
Blain, Edouard John	35, Moore Street, Chelsea, S.W.
Blewitt, Frederick James	Egremont, New Barnet.
Danolds, Henry Grattan	39, Mornington Rd., Regent's Pk.
Fennings, Frank Joseph	76, Ladbroke Grove, Notting Hill.
Fitter, Septimus	24, Wheeley's Road, Edgbaston, Birmingham.
Fouraker, Frank	59, Calabria Road, Highbury, N.
Gabell, Douglas Phillimore	33, Brixton Road, S.W.
Gardner, Charles Smith	20, Barton Street, Gloucester
Goodman, William Henry	Strand, Topsham, Exeter.
Harrison, Philip	Woodhays, Muswell Hill, N.
Henry, Archibald Rutlidge	Heimath, Baldslow Rd., Hastings.
Hilder, Albert Thomas	Marlborough House, Swanley, Kent.
Hope, Arthur Curling	Rockholme, Quarry Rd., Hastings.
Johnson, Horace William	43, Upper Gloucester Place, Baker Street, W.
Kershaw, George	Market Street, Heywood.
Martin, Gavin William	7, Manningham Lane, Bradford.
Mordaunt, Francis George	76, Surrey Street, Sheffield.
Mosely, Edward	312, Regent Street.
Northcroft, George	4A, Portman Mansions, W.
Osborn, Lewis James	1, Rodney Street, Liverpool.
Parris, Richard Stanway	4, Aubrey Road, Crouch End, N.
Ranken, John George	37, Trinity Square, S.E.
Reed, Charles Scholefield	67, Dawes Road, Fulham, S.W.
Roberts, Harry Trist	60, Cambridge Gardens, North Kensington.
Steele, Tom Barton	3, St. Leonard's Road, Exeter.
Stevens, Herbert John	72, Jenner Road, Stoke Newington, N.
Tisdall, Charles James	2. Heathfield Road, Acton.
Townend, Edmund Francis	17, Cliff Villas, Bradford, Yorks.
Turner, Harold Arthur	Southdown, Chatsworth Gardens.

Watson, Francis Edward... ... 14, Belmont Road, Clapham, S.W.
Weston, Ernest... ... ... 2, High Street, Ventnor, Isle of Wight.
Whittles, John Dencer ... ... 7, Birchfield Road, Birmingham.
Woodcock, Richard Ernest ... 35, Trinity Square, S.E.

Royal College of Surgeons of England.

EXAMINATION FOR DIPLOMA IN DENTAL SURGERY.

DENTAL ANATOMY AND PHYSIOLOGY AND DENTAL SURGERY.

November 28th, 1892.

DENTAL ANATOMY AND PHYSIOLOGY.—1. Give an account of the spaces and channels other than dentinal tubes which occur in various dentines, and describe their contents. 2. Give examples of: (i) teeth dwarfed so as to become nearly or quite functionless; (ii) oral structures other than teeth fulfilling the functions of the latter. 3. Name the periods at which you are able, and those at which you are unable, to determine the age of a human subject from birth to maturity by an inspection of the teeth.

DENTAL SURGERY AND PATHOLOGY.—1. If a tooth has ached, (i) for short periods with intervals of complete ease, (ii) very severely for some hours, pain then ceasing but returning after some days, what can you infer as to the state of the pulp, and what treatment would you adopt in each case? 2. A heavy blow has been received upon the upper front teeth, fracturing some. What are the various forms of injury the teeth may have sustained, and how would you severally treat them? 3. Where and by what means would you perforate the antrum: (i) the teeth being all in place and healthy; (ii) the canine and second molar and the intervening teeth being reduced to stump; (iii) the jaw being edentulous?

ANATOMY AND PHYSIOLOGY.—1. After ligature of the common carotid artery, how would the collateral circulation be carried on? 2. Mention the nerves which are distributed to the tongue. Give their several functions.

SURGERY AND PATHOLOGY.—3. How would you treat hæmorrhage from a wound of the tongue; describe the complications which may occur. 4. What is an abscess, and how is it formed? What are the physical, chemical, and microscopical characters of pus?

THE DENTAL RECORD, LONDON: JAN. 2, 1893.

TO OUR READERS.

PROBABLY no one will gainsay the statement that the year which has just passed into the region of ancient history will not rank as an *annus mirabilis* as far as dental history goes. It has been an interesting year in many ways, a year of forward movement both in the direction of further protective legislation, especially in the matter of "covering," and in the general trend of dental education. Each year brings dental workers more to the front, as scientists as well as mechanicians, and this past year has been perhaps more fertile than usual in the harvest it has produced of bacteriological and microscopical research. Many names well known in the dental world both at home and abroad have disappeared and familiar faces have vanished, leaving memories of good men memorable for good deeds. The status of our profession certainly assumes a more satisfactory condition each year, and this has been very conspicuously demonstrated during 1892 by the complete failure of a somewhat rancorous attack upon the profession of dentistry in the pages of a society journal. We are willing enough to admit the truth of the saying *tot homines tot sententiæ*, but we venture to think that it is a little too late in the day to jeer back a profession into a mere trading association. Barber surgeons and tooth-extracting blacksmiths are relics of a bygone and almost a forgotten time, nor will their more modern representatives be able to survive the strong set of the current of public opinion in favour of scientific surgeons and scientific dentists. The dental societies have in this country maintained their activity, and probably never were more prosperous. The literature which comes under the heading of "home production" perhaps leaves something to be desired. We are not as a profession fluent writers, nor would it appear that any proportion is maintained between the inventiveness of our mechanicians and the literary efforts of our savants. Probably if this be Scylla, the

Charybdis of a constant production of mere ink-slinging articles, written it would appear without adequate cause or the warranty of sufficient information, is infinitely a worse evil. We may say that our personal experience of the year has been pre-eminently satisfactory. One cannot please everyone, but we have the encouraging assurance from many quarters that the DENTAL RECORD has by its freedom from pandering to the whims of a few been of real service to the many. Few perhaps know the pains and penalties involved in the conduct of a journal wholly independent and solely subsisting for the best interests of the profession, as is the case with the DENTAL RECORD, nor is it easy to estimate the pleasure which is given the management by the expression of approval and the support given by the profession. We have many friends to thank, and them we thank most heartily and wish them many years of life and happiness. The profession of dentistry, advancing as it has done by leaps and bounds to its present coign of vantage, must owe its solidality and cohesion in no small measure to its literature. To be of use in this way a journal must receive active help as well as sympathy; fearlessness and justice alike in the expression of our opinion, whether of men or books, have been our watchwords in the past, and we trust will be inscribed in the future upon the banner which heads our march forward. We therefore appeal with no fear of refusal or hesitancy for renewed support, and hope that as in the past so the more in the future dentists will make it a matter of principle to put on record all cases of interest, all novelties in manipulative procedure, or other matters the knowledge of which must prove advantageous to the profession. Our columns have always been open to such contributions, and we invite all to send us articles and letters, and for our part promise to ventilate all views provided they fall in with the one all-important condition of professional utility. We wish our friends and readers all success in the New year and hope to have even a larger circle when the swift passage of time brings us to the beginning of 1894.

GOSSIP.

Japanese Dentistry is a thing to marvel at. A gentleman who was on a visit to Mr. Hubbard, the American Minister to Japan, sends the following interesting narrative :—" One day I was troubled with the toothache, and Mr. Hubbard took me to a dentist and explained to the saddled-coloured operator that I wanted the grinder extracted. I was placed in a bamboo chair and tilted slightly back. The dentist examined my teeth, talking volubly meanwhile to Uncle Sam's representative. Suddenly his thumb and forefinger closed on the troublesome tooth, and before I had the faintest idea of what was going to happen he lifted it out and held it up before me, smiling at the same time that vacant smile peculiar to the children of the Orient. 'You were waiting for the forceps, were you?' said Minister Hubbard with a laugh. 'They don't use 'em here. Look at this. Here is a young Jap. taking his first lesson in dentistry.' A twelve-year-old Japanese boy sat on the floor, having before him a board in which were a number of holes into which pegs had been tightly driven. He was attempting to extract the pegs with his thumb and forefinger. Mr. Hubbard explained that as the strength of thi natural pair of forceps developed by practice, the pegs would be driven in tighter. After a couple of years at peg-pulling the young dentist would graduate, and be able to lift the most refractory molar in the same manner that he now lifted wooden pegs."

The above paragraph appeared recently in an evening paper, but the authority who vouches for its accuracy is but dimly veiled as " a gentleman."

Which reminds me of a story told the other day of the estimable vicar of a country parish who, in conversation with a member of his flock, and whilst trying to identify a particular personage, asked " Was he a clergyman ? " To which came the prompt reply, " No, he was a gentleman ! "

No doubt Japs. are very dexterous at tooth-carpentering, as in other branches of human art, but one would like to see the cleverest of them tackling a good lower wisdom that required some lifting. As we are not informed how the difficulties of extracting *roots* are circumvented, the imagination is left to picture a special development of the nails, with the temper of an " Evrard " blade.

SPEAKING of extraction reminds us forcibly of our utter literary barrenness in this direction. It is true that some attempts have been feebly put forth by one or two authors, but no serious effort has ever been made to supply the student with a manual on this subject, and yet it is quite worthy the pen of anyone who has anything to say about it, provided the saying be scientific as well as practical. As matters now stand the youthful aspirant to dental fame finds himself—very early in his hospital career—blushing beneath the responsibility of *relieving* "the necessitous poor" of their grinders, with hearts full of charity perhaps, but with heads and hands which are primed for their work by haziness and a pair of forged steel blades. It is true that the difficulties are often surmounted with astonishing rapidity, and sound practical knowledge and dexterity assert themselves; but how much better that the young student should have some adequate guidance—even though it be theoretical—before he commences to dislocate the dental organs of his poorer brethren!

THE extraction of teeth calls to mind the incident which occurred in the "Surgery" (horrid word, often too full of meaning) of an advertising dentist who placarded his "professional" skill in the local paper as "painless dentistry." An unsuspecting member of the public, brimful of the sweet quietlessness which characterises the gentler sex, applied to the man of skill for his lethal assistance in the matter of an offending molar. Slowly but surely did the knight of the forceps torture his confiding victim. At last, worn out with suffering and awakened to the realization of dull fact, the lady found voice to exclaim, "I thought you professed to perform *painless* dentistry!" "Quite true, madam," was the bland reply, "painless to the *dentist*, not the *patient*."

THE days of the present Dental Hospital of London are numbered. For some time past it has been felt that the accommodation both for hospital and school purposes has become inadequate. It is said that a good site, in a commanding position with plenty of light, has been secured. Light, and plenty of it, is the dentist's *sine qua non;* but that punning has become unfashionable one might be tempted to say that it is the dentist's principal *lux*-ury. But the cost is somewhat appalling. The figure which is mildly hinted at is £40,000. Will the public respond to the appeal? The answer is yes! if they can be shown that the want is a real one, and that something really good—not a sandwich doll's house—is to be given in return for the effort. Already, the staff and some of the immediate friends of the hospital have set the ball rolling with a right good kick in the shape of subscriptions. Messrs. Ash kick off with £500, and are well backed up in the field. Let us hope that the virus may spread ; contagion counts for much in philanthropy and politics, especially the latter. But the DENTAL RECORD is not political ; nevertheless it wishes the new hospital a good measure of success. To the fore, all the alumni of the old school in Leicester Square !

WHERE is the Odontological Society going to find a new home? The matter is not yet settled, but it is to be hoped that in its new quarters a better room may be found than the present one for hiding the riches of its unrivalled museum.

THE next meeting of the British Dental Association is to be held in Birmingham during the month of April. The innovation as to time will probably be appreciated by many who thought August an inconvenient month. Inconvenient to two classes of practitioners: those who live in London and want to hasten away from professional cares during the popular holiday month, and those who practise in fashionable holiday resorts and want to garner in their August harvest. The local Committees have not been idle, and already there are signs of a good meeting. There is a rumour of a Microscopical Section, and this is a step in the right direction. Dental Microscopy wants encouraging because it is indissolubly linked to Pathology, and no candid critic can admit that the latter science has received the attention which it ought to occupy in our literature. A critique of Mr. Chamberlain's article in the *Forum* on "Municipal Institutions" is headed "Oh, come and learn at Birmingham !" Let this be the war cry of our Midland friends who are striving to make the meeting a success.

A CORRESPONDENT writes :—"The following may be of interest to the readers of the *Record*. A lady called on me this morning to tighten a small case which she had already swallowed three times. Her words were 'it always made her a little anxious when it happened.' The piece consists of two upper bicuspids mounted with rubber on a small gold plate, with a gold wire round the molar and a blade on the canine. Swallowing these teeth seemed to the lady quite a commonplace event."

Selections.

THE APPLICATION AND INFLUENCE OF FORCE IN ORTHODONTIA.

By C. S. Case, M.D., D.D.S. Chicago, Ill.

The operation of correcting irregularities of the teeth by mechanical force is gradually being placed upon a scientific basis, where even the most difficult cases may no longer be considered doubtful problems, or their perfect restoration more than should be naturally expected from the hands of a dentist who gives this department of his profession its legitimate share of his attention.

This I believe to be largely due to the somewhat modern adoption of the banding of teeth as a means of support to regulating appliances; which enables one to construct an apparatus that can in most instances be permanently attached to the teeth from the beginning to the end of the operation; that will possess proper machinery for delivering the force in amount and quality directed and controlled throughout all the processes of change in exact accord with physiological requirements; and finally to possess means for holding the teeth until they are permanent in their new and regular positions.

It is unfortunate, however, that our literature in this department is far from complete, judging from the most modern publications; and will continue to be so as long as text-books upon orthodontia ignore as a prime factor to the beginning of every work, the principles of philosophy of force in all its relations to this subject. For if anything is true, the whole subject, from a mechanical standpoint of correcting malposed teeth, resolves itself into a question of ways and means for the utilization of force—its application, transmission, distribution and management along lines of contact and resistance.

Nearly all the literature upon this branch of the subject deals with specifics rather than principles, and consists largely in a vast number of histories of cases in practice, with the particular method of treatment so emphasized by the author that a novice would imagine there was no other way than the one described—whereas these may have been a number of even better ways. Show me a case of irregularity of teeth, and I will study out half a dozen ways for correcting it, many of which as they occur to me will seem to be the only true way, until by continuing the study I am suddenly surprised by another and far more practical way which arises in thought.

We are all more or less influenced in our professional lives by others who perhaps have made a special study of some particular branch, and whose teachings we are glad to accept as a guide in our daily practice ; yet in every department there will arise individual peculiarities which demand individual thought and variation of treatment ; and what is of peculiar importance in this department : —there are rarely two cases of malposed teeth so alike that each does not demand some peculiar and very important variation in the correcting apparatus. Even where the teeth in some case presented for treatment seem to be situated in exactly the same position shown in the illustration of a similar case in text-book or periodical, there may be other and equally important conditions—not shown or mentioned by the author—which make the two cases decidedly different, and the method he has successfully used quite impractical for us.

To those therefore who hope to be eminently successful in this department I wise to emphasize the importance of thorough training in the foundation principles. Know well the possibilities presented by nature ; the principle of force and its proper application and management ; then if you will adopt some system in the main whereby the appliances may be constructed under your immediate supervision—permitting a freedom of ingenuity not possible in an attempt to use some particular set already in the market—a far more perfect treatment of malposed teeth will be given suited to the needs of particular cases in hand.

In the short time allotted to a paper I shall attempt to give only a few thoughts relative to the principles of force in the correction of irregularities of the teeth, dwelling more particularly upon the influence which different ways of attaching the appliance have in the production of certain movements—on the one hand to obtain all the advantage which the force employed affords in producing the greatest amount of movement, and on the other, of so distributing or managing the anchorage force that little or no movement of other teeth is produced.

In correcting the positions of malposed teeth, it should never be forgotten that the important and indispensable part of the operation is to so regulate the force that the normal functions and healthful conditions of the teeth and surrounding tissues are preserved, and that nature will permit their movement, physiologically, only so rapidly as she is able to take care of the broken down tissue of retrogressive metamorphosis, caused by pressure of the tooth upon the walls of the alveolar socket. The rapidity of the movement will be influenced largely by the age of the patient, and differ as other things differ with people.

The point which interests us under the caption of this paper relative to the application of force may be stated as follows: as soon as the applied force overreaches the possibilities of natural (and I may say physiological) change—the surplus is liable to spend itself in producing some undesired and unlooked for condition. In other words, nature can work only so rapidly, and any attempt to force her beyond her natural powers will result—if not in disaster—certainly in a misdirection, and transference of the force to other parts which should not, and would not otherwise, be disturbed. For instance, it is not always possible to move the apices of the roots or teeth in the same direction that we are able to move the crowns, and it is usually quite important to avoid moving them in an opposite one.

On account of the relatively hard surface layer of alveolar process there is always a tendency for it to act as a fulcrum over which the tooth is tipped; but, fortunately, the apical region of bone in which the roots are imbedded usually presents sufficient resistance for it to remain as the true and immovable fulcrum of the lever so long as the force is not increased beyond the powers of absorption in other portions of the socket. The moment this does occur, however, the peripheral surface of the alveolus becomes the fulcrum, while the load is delivered at the end of the root in the opposite direction, and in exact proportion to the surplus force. If we admit that the apical portion of the socket—blending as it often does with the cortical layers of true bone—presents greater resistance to changing the position of that portion of the root, there can be but one conclusion, viz: so long as the pressure is kept within physiological bounds, it makes little difference in regard to the length of the arm of the lever, or, in other words, whether the force is applied near the occluding surface of the teeth or at the cervix, providing always that it is not restricted in its action by the method of attaching the appliances.

As an illustration, notice the action of the force of an oar in propelling a boat in still water. If only sufficient pressure is used against the oar to permit the water to pass from in front of the slow-moving blade, there will not be sufficient pressure at the fulcrum, or oar-lock, to overcome the inertia of the boat; but immediately upon the force being increased above the possibilities of the water to get out of the way, the fulcrum of the lever is transferred to the water and the load of surplus force is delivered at the oar-lock with a movement of the boat. Let me give another, and perhaps more forcible, example. Drop the point of a crow-bar into the ground at the side of a large cake of ice fixed immovably in place. Now, if we heat the bar and press it against the cake with only sufficient force to permit the ice to melt in front of it, little or no change of position will take place at the front of the bar, but the moment we increase the pressure above the melting possibilities of the ice, the fulcrum of the lever is transferred to the cake and the load of surplus force is delivered at the point of the bar, with a tendency in proportion to the pressure of forcing it laterally in an opposite direction in the ground. This illustration is only one of many conditions which may and often are produced by excessive or misapplied force in operations for correcting irregularities of the teeth.

It must never be forgotten that the exact load or measure of kinetic force used in the movement of a tooth must always be expended in another direction upon a rest or anchorage.

It has been the common custom for a great many years, of distributing this second force upon a broad surface, by means of a plate where it was received partly upon the jaw and partly upon a number of teeth producing no material change in their position. With modern methods for correcting the position of malposed teeth there is not often a need for an anchorage plate, and there are many reasons for avoiding its use—which it is not necessary for me to mention here. Suffice it to say that the single reason alone of the instability of such anchorage, making it impossible to utilize and properly direct the positive and intermittent force of a screw, would be sufficient for me to employ other means for this purpose, which are now amply supplied by attaching the appliances to bands permanently cemented upon the teeth.

Perhaps the most scientific and important possibility in the utilization and management of force is where two or more malposed teeth are so situated that the force which would otherwise be expended upon a static anchorage for the movement of one is neutralized and rendered inert by an equal force for correcting the position of another or others. A single form of this is shown when a wedge, spring, or jack is used to separate two teeth, approximal to each other or on opposite sides of the mouth, each requiring the same magnitude of force. But if a proper amount of study were given to every case, and sufficient ingenuity employed in the construction of the apparatus, a vast variety of changes would be found possible, and often with little or no force expended upon teeth other than those required to be moved. Under this head I wish to mention an implement which I call a "jack and traction screw." It was introduced at the First District Dental Society of New York City in 1890, and published in the April number of the *Cosmos* of that year, but I have since made an important addition to it which greatly enlarges its usefulness. With this implement the anchorage force used in the movement of one tooth is rendered inert by an equal force expended upon another tooth in an opposite direction. Originally it was intended to move two teeth which were approximal or situated near each other, the one standing within the arch and the other without, both requiring the same magnitude of force to correct their positions. By means of the improvement if one tooth takes its position now before the other the force can be immediately transferred from it to a static anchorage on the opposite side of the jaw, or to some other tooth requiring the same direction of movement, after which the apparatus can be made to continue its work until the other tooth has been forced to the desired place.

The improvement or addition consists in resting the end of the screw bar loosely in a short tube soldered to a static anchorage bar, or to a bar or contrivance extending from some tooth which requires to be moved or rotated, and which is brought into the field of work to utilize the force of inequality, which would otherwise need to be transferred to—and therefore lost in—a static anchorage. Then, by adding two extra nuts to the screw bar, the force can be perfectly directed and controlled. For instance, if the bicuspid comes to place before the cuspid has been forced out from its inlocked position, the nuts are tightened on either side of the anchorage bar fixing it immovably to the anchorage teeth, while by operating the appropriate nut forces the cuspid to place. If on the other hand the cuspid goes to its place first, the second nut should be loosened and the third nut made to do the work of pulling in the bicuspid, while the first nut is kept sufficiently tight to hold the cuspid in place.

Another very important application of the jack and traction screw—where it can be used—is in torsion, and especially when the tooth to be operated needs also to be pushed out or drawn back into the arch.

A thin band soldered to the end of the bar is passed around the tooth and buttoned to the cemented band, while the base of the jack rests against a lug or series of lugs on the opposite side. As the nut is turned, a traction force is extended upon one side of the tooth and an equal jack force upon the other, rotating the tooth upon its long axis which is the only true way of torsion. Other motion if required is produced by operating the nuts at the end of the bar.

In regard to methods of attaching the appliances to teeth to produce required movements or static anchorage, I desire to have it understood that I claim no originality. My purpose only is to emphasize some of the important rules laid down by others.

In order to bring these ideas practically before this convention, I have constructed a large model of the alveolar arch in soft clay, into which I have inserted large wooden teeth with bands and appliances attached, with the view of showing the influence in motion and direction which different ways of attaching the appliances will tend to produce upon natural teeth with a similar application of force.—*Dental Review.*

Journalistic Memorabilia.

A MEANS OF COMBATTING CHLOROFORM COLLAPSE.

Prof. Koenig is accustomed, in the case of chloroform collapse, to revive the patient by compression of the cardiac region exercised 30 to 40 times a minute, during which pressure is made on the thorax for the purpose of inducing artificial respiration. Dr. Maas, assistant of Prof. Koenig, has modified this proceeding and has thus saved two patients in which the usual method had failed. He operates as follows: The doctor places himself at the left of the patient and exercises with the thumb very energetic pressure between the apex of the heart and the right border of the sternum. These pressures are repeated about 120 times a minute. Under their influence, the pupils (always dilated) are contracted, and the action of the carotid pulse is established. Then, at the end of some time, spontaneous respiratory movements begin, and the pressures may be suspended so long as the pupils remain contracted and respiration continues. Then recommence until the circulation and breathing are definitely established. This method was recommended in this country many years ago by Dr. Dudley Buxton, and probably is explicable, as he points out, by the mechanical stimulation of the heart produced by the hand.

How to Get a Tin Cast.

Get a good plaster model, dry it, dip in melted stearine, and take two or three impressions in moulding sand. Pour tin into one of them, wait a few moments, and pour the tin in the sand back into the ladle. A thin coating of tin which has cooled gives a perfect hollow cast. If too much time is allowed the hollow cast will be too thick. A little experience will show how long to wait. With a very thin saw make several cuts from the edge to the centre of the ridge. Fill with plaster, and you have a plaster cast coated with tin, and the slits made allow the sections to be bent inward, and the plate will come off. If this last precaution is not taken, you are liable to fracture the plate or check the gum sections in taking off the case. With small partial cases that come off and on the model easily in the wax, I invest without the model, and finish and fit the case to the model after vulcanizing. Then it goes into its place in the mouth without any filling.

Let me ask some young operator who swears by a plaster model to try my way with the next partial plate he has to make. Of course, I do not refer to partial suction cases, as I never make any. Get a perfect impression in modelling compound, making a special tray, if necessary ; dry and dip the model ; make a wax plate with a strong wire or two embedded in it ; grind in the teeth, at the chair preferably ; and see that the wax plate fits the model nicely in every part. Take it off and on two or three times till you feel sure you do not bend it in so doing. Invest without the model, and when it is finished and polished it will fit the model exactly and the mouth as well. If your case ever breaks, or you want to add a tooth, your model is ready. If your patient goes abroad and breaks the case, you can mend it and be sure it will fit, if sent by mail; and if some poor old grinder gets loose and drops out, you can cut the corresponding tooth off the model and add one. It is sure to be right.—*Items of Interest.*

BUCCAL AND DENTAL MANIFESTATIONS OF INFLUENZA.

In an article on this subject Dr. Hugenschmidt sums the subject up as follows:—

In a word, we have met with: 1. A special kind of infectious ulcerous stomatitis due to influenza. 2. Ulcerous or simple gingivitis, accompanied by dental generalized periostitis. 3. Suppurating alveolo-dental periostitis. 4. Neuralgia of the fifth nerve. 5. Accidents of evolution of the wisdom teeth. Simple and phlegmonous tonsillitis, more or less developed, has also been observed very often by general practitioners.

As local treatment, nothing special. Antiseptic mouth-washes, thymol, boracic acid solution.

Application on the gums of the following preparation:

Salol, 6 parts; Liquid vaseline, 40 parts. M.
Sig.—External use.

Liquid alimentation. Against pain, the following mixture painted over the gums:

Menthol, 3 parts; Chloroform, 5 parts. M.

HINTS WORTH REMEMBERING.

To remove the stains of tincture of iodine, from either the hands or napkins, apply strong ammonia. The spots will immediately come out clear.

The stains of nitrate of silver, from either the hands or napkins, can be easily removed. First cover the spots with tincture of iodine, wait a few moments, then apply strong ammonia, and rub well.

In using argenti nitras in treating children's teeth one may accidentally get a few grains of the powder on one's hands and not discover it till the hands are washed, when the black stains will be well set. By proceeding as above, they will disappear at once. —DR. MAXWELL in *International Dental Journal.*

THE DENTAL RECORD.

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ON THE RELATION OF NERVES TO ODONTOBLASTS AND ON THE GROWTH OF DENTINE.*

By W. G. AITCHISON ROBERTSON, M.D., D.Sc., F.R.C.P.E.

CLINICAL and pathological observation both show that the dentine of the tooth is very closely connected with the nervous system, and is in consequence highly sensitive. Upon what structures does the sensibility of the dentine depend? In what manner is the dentine connected with the nerves of the pulp so as to become so sensitive to external stimuli?

Perhaps there is no other structure in the body which is so largely supplied with nerves as the pulp of the tooth; even in the smallest fragment we find many nerve fibres. If we take the pulp from the incisor tooth of an ox and examine it after having allowed it to lie in a solution of osmic acid for a few minutes, we can see clearly through the darkened semi-transparent tissue a large blackened nerve trunk passing up the centre of the pulp, giving off on its way innumerable lateral branches, and dividing in a brush-like manner near the upper part of the pulp. All the fine branches are directed towards the periphery of the pulp. In longitudinal sections of the pulp we can see the same in greater detail; many large bundles of medullated and non-medullated nerve fibres running longitudinally near the centre and giving off lateral branches, which are found in great numbers near the periphery, and divide into single nerve fibres just under the odontoblastic layer, being specially numerous at the apex of the pulp. The separate nerve fibres enter the layer of odontoblasts and are lost in it. Teased specimens of osmic acid preparations of pulp also show its richness in nerves. I may note in passing that in many of the teased specimens the axis cylinders of medullated fibres were often found projecting a long way beyond its medullary sheath. (Fig. 1.) It appeared as if the sheath had broken across at one of the nodes of Ranvier and had been pulled off the axis cylinder. In these fibres, however, the broken end of the sheath was sharp and abrupt; whereas, had it given way at a node, we should have expected to find its end inverted, owing to the natural constriction in the sheath at the node. The presence of these long isolated axis cylinders seems to me to completely refute the idea of Professor Leydig, that the nerves are tubes filled with a semifluid substance, and also the assertion of Engelmann that the axis cylinder is not perfectly continuous, but is, like the medullary sheath, interrupted at Ranvier's nodes.

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*A paper read before the Odonto-Chirurgical Society of Scotland and reported in their Transactions.

Non-medullated nerve fibres are also seen in such preparations, though not so numerous as the white. In some preparations they may be separated from the medullated fibres, and can be recognised by the nuclei at intervals in the neurilemma. (Fig. 2.)

How do these terminal filaments of the nerves end in the odontoblastic layer? Why should there be such a multitude of nerves in the pulp if they have not a special function and definite termination? In all other parts of the body the function of nerves is motor or inhibitory, sensory, secretory, or trophic, and the fibres mostly end in special terminal structures at the periphery. Do the nerves of the tooth end in the odontoblasts themselves? or, as Magitot affirms, in a layer of cells beneath the odontoblasts? Do they pass between the odontoblasts and accompany the dentinal fibres into the dentinal tubules, as stated by Waldeyer; or do they pass between the odontoblasts and occupy a special set of tubules in the dentine, as described by Boll? To find the true answer to these questions was the object of this rather difficult inquiry, and the conclusions I have arrived at, I will now detail.

I shall in the first place describe the odontoblasts as I have seen them in the pulp of the ox tooth. On examining the microscopic sections of the pulp, I was surprised to find odontoblasts were absent from their periphery. At first I thought they had merely fallen away during the process of mounting, but their absence was so constant that another explanation had to be sought. At first I fractured the tooth with a hammer, and on separating the fragments the pulp was usually found lying almost free; and it was these pulps which showed an entire absence of odontoblasts when cut into sections. Professor Haycraft one day happened to pick up a fragment of the tooth thus fractured, and noticed on its surface a shining membrane, which was found to consist of many cells, often closely aggregated and having a round, oval, or pyriform shape. (Fig. 3.) Attached to many of the oval cells there was a long process embedded amongst the other cells. Other fusiform or tailed cells lay free; each having a large nucleus situated in the centre of the round or oval cells and at the broad end of the pyriform cells. These were the odontoblasts that were missing in the sections. The greater number had remained attached to the dentine when the pulp was separated, showing that their connection with the dentine is stronger than with the pulp which they invest, and also demonstrating the actual existence of the *membrana eboris* of Kölliker. The tail or elongated process of these cells is not the dentinal fibre, for it is directed into the substance of the pulp, but is the root, central or pulp process of the odontoblast. The dentinal fibre or peripheral process had been torn off the greater number of the odontoblasts by the act of scraping, though in many a small stump of it remained attached to the opposite extremity of the cell, and in some cases this proximal part of the dentinal fibre could be seen entering a dentinal tubule. These two processes, the long pulp process and the dentinal fibre, are the only processes in the odontoblasts of the ox. These cells have no lateral processes.

To see the odontoblasts *in situ* I sawed through some teeth with great care and removed the pulp by means of a sharp knife· I made sections of these pulps after embedding in paraffin, and found that although not all, yet a very large proportion of odontoblasts remained attached to the pulp. These were seen to be arranged in two layers. Many dentinal fibres could be seen projecting from the periphery of the pulp to varying distances. These had been drawn out from the dentinal tubules and now lay free. (Fig. 4.) In one case the dentinal fibre could be seen springing from its odontoblast, and apparently giving off its lateral branches, the latter, however, being mere rudiments. In other situations, odontoblasts were seen which had become separated from the other cells and had drawn out along with them their internal or root process. This was in some cases of great length, and could be traced for some distance into the pulp. In other cases part of the dentinal fibre still remained attached to one extremity of the separated odontoblast, while from the other extremity the long internal root process was seen extending into the pulp.

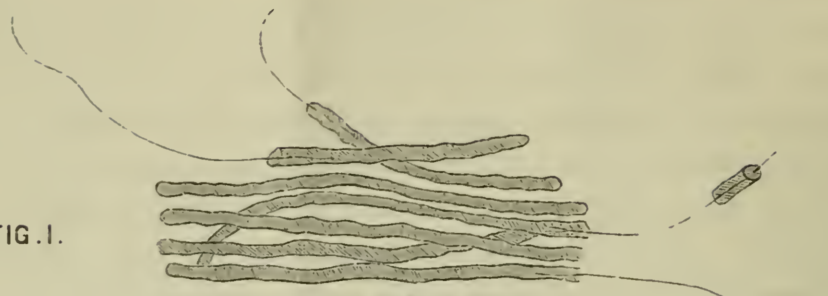

FIG. 1.

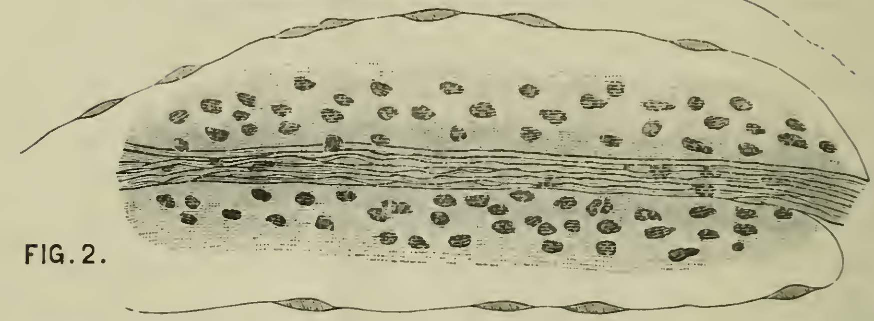

FIG. 2.

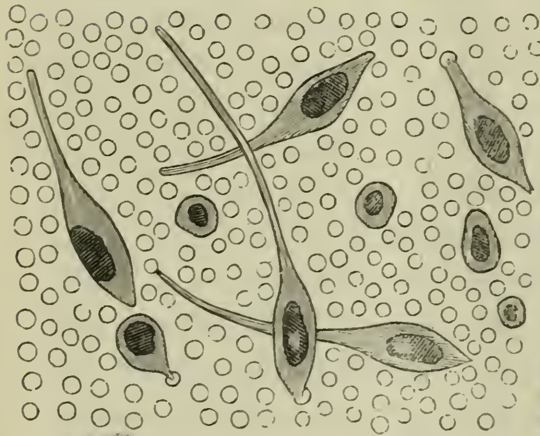

FIG. 3.

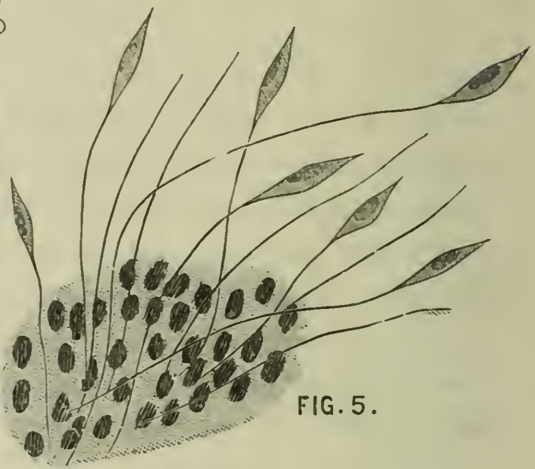

FIG. 5.

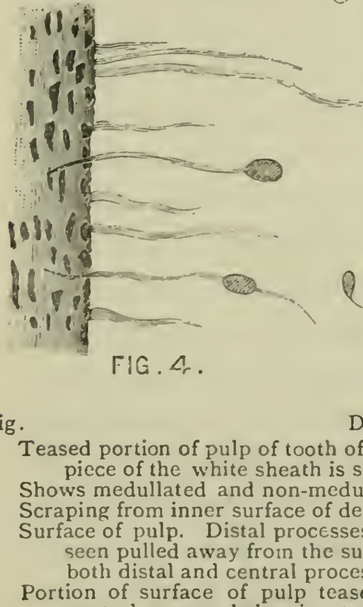

FIG. 4.

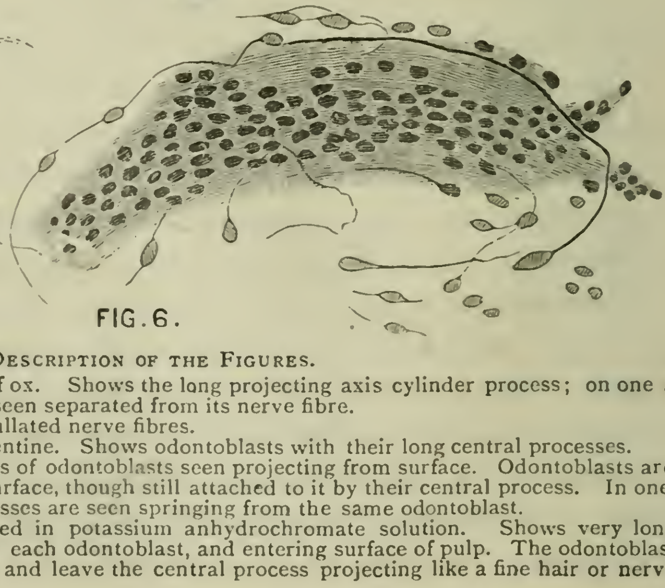

FIG. 6.

Fig. Description of the Figures.

1. Teased portion of pulp of tooth of ox. Shows the long projecting axis cylinder process; on one a piece of the white sheath is seen separated from its nerve fibre.
2. Shows medullated and non-medullated nerve fibres.
3. Scraping from inner surface of dentine. Shows odontoblasts with their long central processes.
4. Surface of pulp. Distal processes of odontoblasts seen projecting from surface. Odontoblasts are seen pulled away from the surface, though still attached to it by their central process. In one, both distal and central processes are seen springing from the same odontoblast.
5. Portion of surface of pulp teased in potassium anhydrochromate solution. Shows very long central process belonging to each odontoblast, and entering surface of pulp. The odontoblast has fallen off in many cases, and leave the central process projecting like a fine hair or nerve fibre.
6. Apparent direct continuation of root process of odontoblast with axis cylinder of nerve.

I have not, in the course of my reading, observed any allusion to the great length of this internal process of the odontoblast ; on the contrary, Waldeyer's description is generally adopted, according to which it is very short and constantly connected with one of the cells lying immediately beneath the *membrana eboris*. According to Hertz the process does not exist. I would, therefore, again direct attention to its great length, to the absence of lateral branches, and to the oval, fusiform or pear-shape of the odontoblasts in the tooth of the ox. In many of these pulps masses of lymphoid tissue are seen. As a rule, these are situated close to the periphery, and just under the odontoblastic layer.

On snipping off small pieces of the outer surface of the pulp and teasing them in a 1 per cent. solution of osmic acid, the specimens showed clearly the nerve fibres isolated and running amongst the odontoblasts, but the latter adhered closely to one another, and could not be separated by teasing, and thus it was impossible to trace the nerve fibres to their ultimate destination. In order to render the cells more easily separable, some pulps were placed in a 0·6 per cent. solution of potassium anhydrochromate for twenty-four hours. Fragments from their outer surface were then teased in picrocarmine, with the result that the long central process of the odontoblast was rendered very evident. (Fig. 5.) These central processes ran into the pulps towards the nerves, and could often be traced inwards to a distance greater than six to twelve, or more, times the length of the odontoblast itself. From the opposite extremity of each odontoblast the dentinal fibre proceeded, and in many cases this was also exceptionally long. The central process arises from each odontoblast gradually, the proximal end of the cell gradually tapering till it becomes the pulp process. The distal extremity of the odontoblast, on the contrary, rapidly narrows down to a fine fibre, which is continued onwards as the fibre of Tomes. The nucleus of each cell seems to be swollen up, and is in these preparations a large oval body filling up a large part of each odontoblast. When examined by a high magnifying power, each odontoblast appears almost as if a mere fusiform enlargement of the continuous fibre formed by the long root process and the dentinal fibre, with a large nucleus in the dilated part.

The next point was to trace the further connection of the root process of each odontoblast. Many preparations of pulp treated with the potassium bichromate solution were made and carefully examined, in order to find out if there were any connection between the root process and the nerve fibre. I am convinced that the central processes of the odontoblasts become continuous with the nerve fibrils. The connection is extremely difficult to make out, on account of the extreme delicacy of the processes, and the manner in which they are obscured by overlying cells and neighbouring processes. Nevertheless, several demonstrations (Fig. 6.) were obtained, showing that the processes do pass into groups of nerve fibres, amongst which they seem to run for some distance before they acquire a medullated sheath. The long central process seems to become the axis cylinder of a nerve fibre which gradually acquires a primitive sheath, in which the medullary or white substance slowly accumulates till an ordinary medullated nerve results.

In other cases the medullary substance seems to develop to its maximum amount at once as soon as the odontoblastic central process becomes continuous with the axial band of the nerve. By the potassium bichromate the axis cylinders and grey nerves are rendered evident as fine silky yellow fibres, and can be traced as such to the central processes of the odontoblasts. It is very difficult to say whether all the odontoblasts send in their long pulp processes to join the nerve fibres. Processes are, however, seen to pass inwards from both superficial and deep layers of odontoblasts.

I have been unable to find any evidence in support of the view advanced by the late Professor Boll, that nerve fibres pass up between the odontoblasts to the dentine. It seems to me probable that the nerve fibres figured by him as passing direct to the dentine were central processes of the odontoblasts that had been drawn out from the pulp, and from which the odontoblasts had fallen off. Certain of my own preparations where this has happened closely resemble the drawings made by Boll (Fig. 5.) Owing to the extreme slenderness of the processes connecting the odontoblasts with the nerves of the pulp, the former are extremely liable to fall off and leave fine threads which might be mistaken for independent nerve fibres. I cannot agree with Boll when he states that some dentinal tubules contain dentinal fibres, while others contain nerve fibres. Nor yet can I at all agree with the statement of Waldeyer, that the nerves accompany the dentinal fibres into the tubules. What I have already stated I believe to be the true explanation—

viz., that the axis cylinders of medullated nerves gradually lose their medullary sheath, and after running through the pulp for a longer or shorter distance in this way, they become continuous with the central processes of odontoblasts, and that the odontoblasts and dentinal fibres are the terminal organs of the nerve fibres. This would explain why the dentine is so sensitive. We may regard the odontoblast with its peripheral process as an end-organ, which, if not itself sensitive, at once transmits sensory impulses to the nerve with which it is connected, as the odontoblast is with the axis cylinder of a nerve by means of its long pulp process. Whether all odontoblasts are connected with nerves by their root process is a question still unanswered, and consequently I cannot say whether all are to be considered as end-organs. Reasoning by analogy, it is not necessary that each odontoblast should be in direct communication with a nerve fibre, in order that sensibility may be conferred on the dentine. It is only certain cells in the epidermis which are specialized to receive sensory or tactile impressions, and these, being connected with the axis cylinders of nerves, confer sensibility to the whole skin, the ordinary cells of the epidermis merely acting as conductors to convey impressions to these sensory cells. Such may possibly be the case with the odontoblasts. It is highly probable also that the nerves of the tooth have a trophic as well as a sensory function. Since nerves pass to odontoblasts, their trophic influence probably extends along the dentinal fibres, and influences the nutrition of the tooth.

GROWTH OF THE DENTINE.

While working at the histology of the pulp, it was suggested that I might at the same time investigate the manner in which the tooth increases in size. How does the small tooth of the young mammal grow into the large tooth of the adult animal? We know that the increase in its bulk is chiefly confined to the dentine, so to this tissue I confined myself in this investigation. There has been much controversy as to whether the enlargement of a bone is to any extent dependent on interstitial growth. To find out whether in the nearly-allied dentine there is or is not interstitial growth seemed an interesting question ; for in this tissue there is no possibility of external deposition, the dentine being formed from without inwards. If there were an interstitial growth in the dentine, we should expect to find the dentinal tubules becoming further separated in the developing tooth by an increased amount of matrix between them, and thus fewer in a given area in the adult tooth than in the young tooth. To determine whether or not this mode of growth obtains in dentine was one of the questions I have tried to solve.

Method of Investigation.—I chose for the purpose of this inquiry the lower incisor teeth of the rabbit, for these teeth grow from persistent pulps, and are therefore never shed. To observe their condition at different stages of growth, I examined them in (1) a rabbit newly-born ; (2) in a rabbit one month old ; and (3) in an adult rabbit. These teeth while still *in situ* in the lower jaw, were decalcified, and sections made in an antero-posterior direction parallel to their long axis. The sections from the very centre of each tooth were alone used for measurement, as these contained the largest pulp cavity, and went directly through the centre of the crown. These teeth, as they are worn down in front, are always being added to from behind, and thus pushed forwards. The enamel is only found on the anterior and lateral surfaces, and is always thickest in the former position, where also the dentine is harder. Consequently, as the crown of the tooth is worn down, the anterior part, being harder, is not worn so fast, and thus the tooth becomes chisel-shaped. In each tooth I determined, with as much accuracy as possible, the following :—

1. The greatest length of the pulp cavity from the root of the tooth to the apex of the pulp.

2. The greatest breadth of the pulp cavity.

3. The thickness of the wall of dentine at the middle of the tooth.

4. The greatest thickness of the dentine at the crown of the tooth.

5. The width of the dentinal tubules at their origin, from the pulp cavity.

6. The average width of the intertubular substance of the dentine.

7. The course and direction of the dentinal tubules, and if branched.

The following table contains these measurements in the three rabbits :—

MEASUREMENTS OF LOWER INCISOR TEETH IN RABBITS.

	Newly-born.	One Month Old.	Adult.
Total length of tooth ...	$\frac{1}{5}$ in. 0·2	$\frac{1}{2}$ in. 0·5	$1\frac{1}{8}$ in. 1·12
Greatest length of pulp cavity	$\frac{1}{6}$ in. 0·17	$\frac{52}{120}$ in. 0·43	1 in. 1·0
Greatest breadth of pulp cavity	$\frac{1}{30}$ in 0·033	$\frac{1}{25}$ in. 0·04	$\frac{1}{14}$ in. 0·073
Thickness of dentine at middle of tooth ...	$\frac{1}{158}$ in. 0·0063	$\frac{1}{42}$ in. 0·024	$\frac{11}{250}$ in. 0·044
Greatest thickness of dentine at crown ...	$\frac{1}{48}$ in. 0·02	$\frac{1}{12}$ in. 0·08	$\frac{6}{50}$ in 0·12
Diameter of dentinal tubules at origin ...	$\frac{1}{24000}$ in. 0·0000416	$\frac{1}{24000}$ in. 0·0000416	$\frac{1}{24000}$ in 0·0000416
Width of intertubular dentine...	$\frac{1}{8000}$ in. 0·000125	$\frac{1}{6000}$ in. 0·000165	$\frac{1}{6000}$ in 0·000165
Character of dentinal tubules...	Run obliquely in straight lines. No branches. Slightly wider near origin.	Wavy course. Not branched.	Wavy course. Many branches.

The result of this table may be summarised as follows :—

1. The fact of the great increase in length of the tooth is evident, it being six times longer in the adult than in the newly-born rabbit.

2. The pulp cavity increases in length in the same proportion.

3. The width of the pulp cavity increases in a progressive manner.

4. The thickness of dentine at the middle of the tooth and also at the crown increases nearly six times.

5. The diameter of the dentinal tubules of their proximal end remains the same at each stage of growth. They are all slightly larger at their origin and diminish in calibre very gradually as they are traced outwards.

6. The dentinal tubules become gradually more wavy in their course, and their lateral branches become evident in the adult tooth.

The odontoblasts, we know, form a complete lining to the inner surface of the dentine, and thus form, as it were, a bag enclosing the pulp, and having its mouth at the inlet of the pulp cavity. Dr. Haycraft suggested that the ring of odontoblasts which forms the mouth of this bag might fitly be called the "formative ring," because it is apparently here that new dentine is constantly being formed. The new dentine pushes upwards that previously formed, which carries with it the odontoblasts attached to its inner surface by the dentinal fibres. The odontoblasts which once composed the "formative ring" are therefore carried up by the rising dentine, for as soon as each has deposited a little dentine at the base of the tooth, it becomes fixed as a permanent odontoblast and is afterwards lifted up. Fresh cells are continually growing below these engaged in the production of dentine, and thus the existence of the "formative ring" is continued. From whence do these new cells arise? Are they derived from odontoblasts, or are they derived from the connective tissue cells of the pulp? I am inclined to believe that they arise from the pulp cells. If we trace the layer of odontoblasts downwards, we find as the dentine becomes thinner so the size of the dentine forming cells decreases, till at the lower limit of the dentine, they are small spindle-shaped cells attached to the dentine by their distal process. Even below the extreme limit of the dentine we can still follow the line of odontoblasts downwards as a layer of fusiform connective tissue cells, gradually becoming smaller till they fade imperceptibly into the pulp tissue. There is no line of demarcation between them and the ordinary small round cells of the pulp.

The question now is, How are we to explain how the tooth has increased so much in size? Well, there appear to be four processes all at work at the same time in the growing tooth. These processes are :—

1. Increase in the length of the tooth by addition of new dentine at the lower end of the fang. This addition more than compensates the loss caused by the grinding down of its crown. In adult age, the growth of new dentine and the wearing down balance one another, and the tooth therefore remains of constant length.

2. Increase in width of the tooth by the gradual widening of the "formative ring."

3. A slight interstitial increase in the dentine, causing the formation of an increased amount of matrix between the tubules. This interstitial increase appears only to occur in the very young tooth.

4. As the tooth grows, new layers of dentine are deposited on the inner surface of the already existing dentine. This deposit is probably due to the influence of odontoblasts, since they are concerned in production of dentine from the beginning.

As the entire tooth is pushed onward by the growth of new dentine at its lower end, the crown is continually being worn down in grinding. The upper end of the pulp cavity is very narrow and contracted, owing to the large amount of dentine which has accumulated on its surface, for in this situation the dentine is of oldest date and so is thickest. Unless provision were made to prevent it, the pulp cavity would soon become exposed by reason of the grinding down of the crown. It is here, however, at the upper part of the pulp cavity, that the dentine reaches its maximum thickness, and so reduces the diameter of the pulp cavity there that it persists only as a fine channel of considerable length leading from the pulp cavity to the free surface of the tooth. Osseous tissue is developed in this channel, which, together with many small round cells and capillaries, prevent any direct communication between the surface of the tooth and the pulp. No odontoblasts remain in this connecting channel, therefore, since the dentinal fibres in the crown of dentine have lost their connection with nerves, the grinding surface of the rabbit's incisor has lost sensitivity. These laminæ of bone which help to block up the remains of the pulp cavity at the apex of the tooth may be part of the layer of cement which, in the persistently growing teeth of many animals, covers over the crown of the tooth, and which may, when worn away, sink into the almost occluded apex of the pulp cavity and grow there. It may, however, be developed directly from the tissue of the pulp.

In the adult rabbit's tooth, then, the growth of the dentine at the "formative ring," the continual deposition of new dentine on the inner surface of the old, and the extent to which the tooth is worn down externally, exactly balance one another, and thus the tooth remains of the same size throughout life. In the young, growing animal, however, the first two of these processes exceeds the third, and so the tooth grows greatly in length, diameter, and thickness of dentine.

Having seen how a simple conical tooth increases in size, the next question which naturally arose was, How do flask-shaped teeth, such as the canine tooth of a cat, increase in size? To answer that question I examined the canine tooth of the lower jaw in (1.) a newly-born kitten; (2.) in a kitten of one month old; and (3) in the adult cat. These teeth in the cat, as in all carnivora, are shed at an early period of existence. This introduces a slight fallacy, for it compels us to compare deciduous with permanent teeth. I made the same measurements in this case that I had made in the rabbit's incisor tooth:—

1. Total length of tooth.
2. Greatest length of pulp cavity.
3. Greatest breadth of pulp cavity.
4. Thickness of dentine at middle of tooth.
5. Thickness of dentine at crown.
6. Diameter of dentinal tubules at their origin from pulp cavity.
7. Width of intertubular dentine.

MEASUREMENTS OF LOWER CANINE TEETH IN CATS.

	Newly-born.	One Month Old.	Adult.
Total length of tooth ...	$\frac{1}{5}$ in. 0·196	$\frac{183}{500}$ in. 0·366	$\frac{59}{100}$ in. 0·59
Greatest length of pulp cavity	$\frac{9}{50}$ in. 0·18	$\frac{8}{25}$ in. 0·32	$\frac{1}{2}$ in. 0·5
Greatest breadth of pulp cavity	$\frac{7}{125}$ in. 0·56	$\frac{37}{500}$ in. 0·74	$\frac{1}{25}$ in. 0·04
Thickness of dentine at middle of tooth ...	$\frac{7}{1200}$ in. 0·006	$\frac{9}{250}$ in. 0·036	$\frac{3}{50}$ in. 0·06
Greatest thickness of dentine at crown ...	$\frac{1}{60}$ in. 0·0166	$\frac{23}{500}$ in. 0·046	$\frac{9}{100}$ in. 0·09
Diameter of dentinal tubules at origin ...	$\frac{1}{17000}$ in. 0·0000589	$\frac{1}{17000}$ in. 0·0000589	At base $\frac{1}{12000}$ in. 0·00008 At crown $\frac{1}{27000}$ in. 0·0000
Width of intertubular dentine...	$\frac{1}{4250}$ in. 0·000235	$\frac{1}{4250}$ in. 0·000235	At base $\frac{1}{4250}$ in. 0·00023 At crown $\frac{1}{6000}$ in. 0·0001

1. This table shows that the lower canine tooth of the adult cat is fully three times as long as it is in the newly-born kitten.

2. The pulp cavity grows longer in the same proportion.

3. As regards the width of the pulp cavity, it seems first to increase in breadth, but in the adult tooth the breadth is less than in the newly-born kitten, but I shall discuss this later on.

4. At the middle of the tooth the dentine increases to a thickness ten times greater than in the newly-born kitten, while at the crown it increases to about six times.

5. The diameter of the dentinal tubules was the same in the young kittens. In the adult cat, however, the tubules at the base of the tooth are one-half larger than those of the younger cats; but near the crown their diameter decreases greatly, being a half less than in the younger cats, and even two and a half times smaller than at the base of the same adult tooth.

6. The width of the intertubular substance remains the same in the canine of kittens and also at the base of the adult tooth. At the crown of the adult tooth, however, it is only three-fourths of the breadth of what it is at the root, or in the younger teeth.

Before describing how this tooth grows, I must first call particular attention to a fact on which the importance of this inquiry rests, viz., this, that the canine tooth of young kittens is not flask-shaped, but merely conical, resembling the extinguisher of a candle, the sides sloping downwards and outwards from the crown.

This originally conical tooth increases in size as follows :

1. By the gradual dilatation of the "formative ring" of cells at the base of the dentine, it is increased in diameter.

2. It is increased in length by the addition of new dentine at the base of the tooth and the consequent elevation of the whole tooth. This also is due to the action of the formative ring.

These two processes go on simultaneously, and so the base of the tooth is always growing larger, while the tooth is growing in length. This outward extension of the basal formative ring of odontoblasts goes on till a maximum is reached. This broadest part of the pulp in the growing tooth of the kitten is at the base, while in the adult cat it remains about the middle of the tooth. Thus in the newly-born kitten, the broadest diameter of the pulp cavity was at the base of the conical tooth, and measured 0·056 inch. In the kitten one month old the basal diameter of the pulp was still the greatest, the tooth still being conical and measured 0·074 inch. It had not yet become flask-shaped, but about this time the pulp cavity attains its greatest breadth and afterwards diminishes. The elongation of the tooth still continues, but the formative ring now gradually contracts, and thus forms an inverted basal cone, and so leads to the production of the flask. The narrowing of this basal ring continues, until in the adult it becomes a small ring surrounding the vessels and nerves going to the pulp. The elongation of the tooth has also caused its broadest part to be situated about midway between crown and base. Thus the tooth is made up of two cones joined at their bases, the "crown-cone" being formed by a dilatation of the "formative ring," and the "fang-cone" by the gradual narrowing of the ring.

3. During the whole time that the tooth is growing in length, a constant deposition of new dentine is taking place on the inner surface of the old. Thus the maximum diameter of the pulp cavity in the young tooth becomes lessened, till in the adult, the original pulp cavity is much reduced in size compared with its width in the newly-born kitten, Having reached this stage, the processes of

growth cease, and thus we have a typical flasked-shaped tooth produced. We see now how the apparent anomally regarding the width of the pulp-cavity arises. From the table we find that the width of this cavity is less in the adult tooth than it is in the new-born kitten. This is due to the large deposit of new dentine on the inner surface of the old, causing such a narrowing of the pulp cavity that the above condition is produced.

4. It is also shown that there has been an interstitial change. The dentinal tubules are smaller and closer together near the crown of the adult tooth than near the base. At the base the amount of interbular dentine remains the same as it is in the younger cat's tooth, though the tubules themselves are a good deal larger in diameter than in the earlier conditions.

Regarding fang-formation, we have seen how a single fanged tooth, as the canine, is developed by the gradual narrowing of the basal dentine-forming ring. If, however, this formative ring, having reached its maximum dilatation, becomes constricted at two opposite points till these meet like a figure of eight, then two smaller formative rings are produced. If these both go on forming dentine, and diverging from one another, we have two "fang-cones" produced, springing from one body, and giving us a double-fanged tooth. In a similar manner, if the formative ring becomes sub-divided into three or four rings, we have a three or four-fanged tooth resulting. The tooth follicles themselves—even of the molar teeth—are quite simple, and show no indication of roots. It is only after the body of the tooth has been completed that the roots are produced.

This inquiry shows that the growth of a tooth is only to a very slight extent interstitial. Interstitial growth is seen in the incisor tooth of the rabbit, where the dentinal tubules become further separated by an increase of dentinal matrix, but this appears to take place only in the young tooth. Probably it causes a slight increase in the size of the rabbit's tooth.

In the cat, however, it does not cause any increase in the size of the tooth, the width of the intertubular substance remains the same. It is only in the upper part of the adult tooth that the tubules are smaller and more closely packed. All we can affirm in this case is that the interstitial increase of the matrix simply encroaches on the size of the tubules, and so does not cause any increase in the size of the tooth.

The results of this investigation into the growth of teeth may be thus summarised. There is :—

1. Increase in the length of the tooth by addition of new dentine at its base.

2. Increase of diameter by dilatation of the basal *formative ring*. In the case of teeth with fangs, these are produced by the gradual contraction of this ring, with or without sub-division.

3. Deposit of new dentine on the inner surface of the old.

4. A slight increase in the matrix of the dentine by interstitial growth.

I have, in conclusion, to express my warm thanks to Professor Rutherford for the free use of his laboratory, microscopical preparations, and other appliances, and for his careful revision of this paper, and to Professor Haycraft, who suggested this subject for research, and who supervised my work personally, and helped me with many suggestions in the execution of it.

"ON GOLD."*

By W. Francis Mellersh.

Mr. President and Gentlemen,—

We are so often occupied in the working of gold, that having somewhat rashly undertaken to read the paper this evening it occurred to me, that one on this metal might serve as the basis of a profitable discussion. It is not my intention to speak much of its manipulation for filling purposes, as during the past year we have had opportunities of hearing more than one paper on that subject, but rather to consider briefly its general properties, and a few of the processes this metal has to undergo before reaching the hands of the operator, and also how best to work up small quantities of scrap, &c., in the laboratory. Some are rather given, I think, to looking on our branch of the healing art, as quite a latter-day development. It may surprise these to hear that gold was used for dental purposes when the world was somewhat younger than it is now, and before the commencement of the Christian era. Artificial teeth of Egyptian and Roman times have been discovered, in one case (Roman) a full set was found, natural teeth being fixed to an ivory base by means of gold, the denture being similar to those of comparatively recent date in the museum of the Odontological Society ; also Egyptian mummies have been brought to light, some of the teeth of which were filled with gold. Professor McAlister, of Cambridge, has made a collection of Egyptian skulls, and is giving this subject his careful attention, so that doubtless ere long some interesting information may be forthcoming. It is not thought that the *ancient* Egyptians practised dentistry, but that the gold filling in question were inserted about the time of the Roman occupation of Egypt ; records on the whole subject, however, are sparse.

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*A paper read before the Students' Society, Dental Hospital of London.

The following, from the first edition of the *Encyclopædia Britannica*, published in 1787, under the heading of "Surgery," is somewhat interesting as mentioning the use of gold for stopping in the last century. "When a black or mortified spot appears on a tooth, if it be quite superficial it may be removed, but if it go through the thickness of the enamel, it will be more advisable to let it remain. When a small hole breaks out in a tooth, attention should be paid to the admission of air. Tin, lead, or gold leaf commonly employed for this purpose sometimes give relief for many months or even years, but at other times are of little advantage, and in some instances create great pain. When stuffing is to be employed it ought to be done in the intervals of the fits of toothache, otherwise it will give great pain."

The thoughts of such an operation are painful, and make one feel glad that his lot was not cast in the good old days of 100 years ago.

The atomic weight of pure gold is 196·2, the specific gravity 19·5, specific heat 0·028, and fusing point 2016° F., with considerable expansion.

It is found native in nearly all parts of the world—small quantities have been found in Cornwall, Scotland and Wales.

It is not known to exist in any other form than the metallic, but has been thought to exist in some varieties of pyrites as a sulphuret : chiefly associated with the older rocks, it is sometimes crystallized in cubes, and is also met with in threads of various sizes, twisted and interlaced into chains of minute octahedral crystals, and in spangles or rounded grains which are called nuggets when of a certain size ; these vary much in weight, one was found near Bathurst in the Colonies weighing 106 lbs., and containing over 90% of pure gold. Africa is said to have been the richest and oldest of the sources of gold, Sofala on the coast of Caffraria having sands abounding in gold dust, and this is said to have been the Ophir of the Ancients. It is from the United States that our principal supplies of this precious metal come—the yearly production in this country, according to a recent calculation is valued at seven millions sterling, Australia and California occupy the second place and produce a little over five millions worth, but are run very close by Russia with an output valued at nearly 4¾ millions, next come the South African Republics £2,760,000, the English possessions in Asia and Africa £1,920,000, China £1,800,000 and New Zealand £760,000. In California the gold is chiefly alluvial, being found in the alluvial deposits of the river. In Australia quartz is more common, in this the metal is found in plates and branch-like fragments.

It has been estimated, but the calculation is uncertain, that annually *two tons* of pure gold are worked up for dental purposes, and bearing in mind the large numbers of gold fillings which are daily inserted, a friend humourously suggested the other day, that in time to come, operations for the recovery of gold might be commenced on the sites of cemeteries.

Gold, when pure, is the most malleable and ductile of all the metals, as evidenced by Réaumer's well known experiment. He covered a cylinder of silver with 1·360 its weight of gold, this was drawn out until a foot weighed but a grain, this was then rolled until it was but 1-48 of an inch wide, and still the microscope failed to discern a break in the continuity of the coating. Richardson says that a single grain of gold may be drawn into a wire 500 feet in length, and an ounce to extend 1,300 miles. It is not so tenacious as platinum, copper and iron; the stiffness and elasticity are increased by hammering and the tenacity is lessened; it remains unaltered in the longest exposure on account of its want of affinity for oxygen, is incapable of being oxydised in any heat, and is with great difficulty volatilized in the oxy-hydrogen blow-pipe; it unites with oxygen in two proportions, gold sub-oxide ($Au._2\ O$) and gold tri-oxide ($Au._2\ O_3$) being formed, neither compound forms salts with acids, but the tri-oxide unites with bases forming what are called aurates: an interesting compound of the tri-oxide is fulminating gold, this is obtained by the action of an excess of ammonia on the metal in solution. Two gold chlorides are known, monochloride and tri-chloride.

Gold is unaffected by any simple acid, except selenic, but is readily soluble in nitro-muriatic acid (aqua regia), and nitro-fluoric acid.

Its malleability is always impaired by its union with other metals, especially tin, lead, antimony, &c. When alloyed with silver, copper, and platinum in small proportions its malleability is not so much impaired, its tenacity increased, and its fusing point lowered.

Methods of Extracting.—In the case of alluvial deposits, the earthy matters are washed away, the deposit being stirred up with water, the particles of gold, by virtue of their high specific gravity, fall to the bottom of the vessel, or the earth may be thrown upon a sloping tray having grooves cut across the bottom, (baize or hide with the hair uppermost may be substituted for these), through this a stream of water is directed, which carries off the earthy matter, the gold collecting at the bottom. In some cases "cradles" are used, these are troughs having at one end a sieve arranged at a higher level than the trough, into this the earth is thrown, and a stream of water being directed on to this, the gold is left at the bottom. When ore has to be treated it is first heated to redness and quenched in water to facilitate crushing ; this is carried on by means of stampers, or rollers similar to those employed in the Cornish tin works, the ore is treated with water, and so concentrated it is then known as "drist." This finely crushed is put through an amalgamating mill, where it is amalgamated ; the amalgam of gold is squeezed in wash-leather to remove surplus mercury, it is then placed in a distilling apparatus and the mercury driven off by heat.

When melted, lead dissolves gold much the same as mercury does when cold, advantage is sometimes taken of this in the extraction of gold from quartz, the quartz is fluxed after crushing by the addition of lime and clay, to which is added metallic lead or galena (sulphide of lead) and a proportion of coal or charcoal. The lead is separated from the gold by the process of cupellation, in this the lead is oxydised. The mass is heated upon a cupel, or hollow hearth of bone ash, in a reverberatory furnace, and as the oxide is formed on the surface it is blown off by a blast of air or air and steam, and is partially absorbed by the bone ash ; this process does not remove any other metals which may be present. The most frequent impurities are the base metals, lead, zinc, iron, antimony, bismuth, &c. Iridium is sometimes met with.

Refining on a large scale is practised by passing chlorine gas through the metal when in a molten condition, the base metals are converted into chlorides, and are volatilized off, their conversion takes place before that of the gold, when gold chloride is formed it may be known by the purple vapour. The operation is then stopped. If silver be present, the chloride floats on the top and is skimmed off. Other methods of purification are the dry or roasting, and the wet or humid; in the former, reagents are employed which will convert the base metals into oxides, chlorides, or sulphides, and to attain this result chemical compounds containing oxygen, chlorine and sulphur are made use of, which when decomposed by heat yield a sufficient quantity of these elements; those generally used are:—

Nitrate of potash or saltpetre yielding		...	Oxygen
Chloride of mercury yielding	...	...	Chlorine
Sulphide of antimony yielding	...	...	Sulphur

When these are made use of it must be taken into consideration what metal or metals each reagent has a special affinity for, thus Oxygen has a strong affinity for zinc and iron, but not for tin, and to remove the latter chloride of mercury is employed, when the gold is contaminated with several metals sulphide of antimony is used. In the wet or humid process the metal is treated with acids and the dissolved metals are precipitated by their several reagents; the solvent used is aqua regia, consisting of hydrochloric acid, three parts; nitric acid one part. This converts the gold and any other metals which may be present into chlorides, if silver is present it is precipitated, chloride of silver being insoluble. The gold is precipitated from this solution by adding slowly an excess of protosulphate of iron (green copperas) made into a solution with clean rain water. Thus obtained it is a brown powder, which must be washed carefully and treated with diluted sulphuric acid to remove any traces of iron, the result is chemically pure gold. The annexed diagram gives an idea of its microscopical appearance.

One of the most troublesome impurities is Iridium, and this can only be separated from a solution prepared thus, by allowing it to settle and decanting off.

I have thus briefly endeavoured to describe a few of the most important ways in which gold is refined, and will pass on to its preparation for dental purposes. Perhaps the most interesting preparations are foil and crystal or sponge gold.

Foil is prepared partly by mechanical means and partly by hand. An ingot of the pure metal is beaten until the thickness is reduced to about one-eighth of an inch. This with frequent annealings is rolled into an exceedingly thin riband. This is carefully measured and divided into pieces 1 inch square. A "pile" is made with from 100 to 200 of these pieces, with alternate sheets of vellum 4 inches square, and rubbed with plaster of Paris to prevent sticking; several squares of vellum are placed above and below the pile and the whole secured by two strong bands of parchment. It is then placed upon a block of marble and beaten with a hammer weighing 16 lbs. After a time the pile is opened and the leaves from the middle made to change places with those outside, the beating is continued until the pieces are nearly 4 inches square, the leaves are then removed and cut into four; other piles are made with alternate layers of gold beater's skin—prepared from the outer surface of the intestine of the ox—and the beating continued with a lighter hammer until the required thickness is obtained. Foils are supplied in sheets 4 inches square, and are numbered from four upwards according to the number of grains in the sheet.

Of the two kinds of foil, viz.: cohesive or hard, and non-cohesive or soft, I am not able to say very much, as their preparation is kept secret by the manufacturers. Soft foil becomes cohesive when annealed, and hard foil more cohesive. Portions of the former when pressed together become inseparably united, but this is not the case with unannealed soft gold. Under the microscope, cohesive foil is seen to be more crystalline in structure than the non-cohesive, so that the difference is a physical one.

Foils are used either folded and cut into strips, rolled into rope, or in the form of cylinders and pellets. Some operators to form rope, roll the foil in a napkin, but a good way is, I think, to use two velvet covered pieces of wood—one say—about 8 × 5 inches, and the other smaller—about 3 × 4 inches. A sheet of foil is laid on the larger and cut into two or three pieces. Each piece is folded with the knife, until it is about 2 or 4 inches long, and $\frac{1}{4}$ inch wide.

If the knife be now laid along the centre of the strip, by a slight pressure the edges are made to turn up, then by lightly moving the small pad to and fro over them, the strip is made to roll into a rope, tightly or loosely as desired.

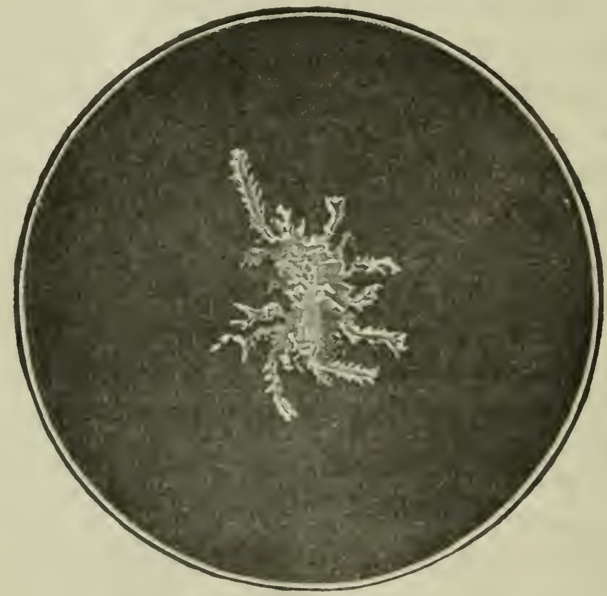
But little is known of the manufacture of cylinders outside the depôts, they are prepared tightly or loosely rolled and of various sizes from very thin foil, both cohesive and non-cohesive. The foils are made into rolls, which are cut in the lengths known as cylinders, special provision being made in the cutting, whereby the ends are not flattened.

It has been demonstrated conclusively that with cohesive foil or cylinders worked in the ordinary way, it is barely possible to obtain a plug which is perfectly adapted to the cavity walls, but that with soft gold in suitable cavities, a plug perfectly adapted to the walls may be obtained. It is stated in Tomes that by the Herbst method of filling, which consists of condensing cylinders by means of swiftly revolving burnishers of various shapes and sizes, plugs are produced, the contact of which with the cavity walls is perfect. As in the case of cohesive fillings, leakage between the gold and the walls is said to be one of the causes of failure at times, when the filling is made in the ordinary way. Why should not the Herbst method be taught in our schools? In suitable cavities most operators will be able to insert non-cohesive fillings in less time than cohesive ones, and for this reason, if for no other, it is better policy to use soft gold whenever possible. I mention this as I think cohesive gold is frequently used where the non-cohesive would be better.

Sponge or crystal gold is a preparation which has found favour with many members of the profession, especially in America. This was first prepared by Mr. Makins, at one time Lecturer on Dental Metallurgy to this hospital. Dr. N. W. Williams, writing in "Items of Interest," says that this preparation was placed before the profession in 1855, and that "Professors George Watt and J. Taft invented a form of crystal gold, which they exhibited, filling a number of teeth to demonstrate its superiority over gold foil."

Pure gold is placed with pure mercury—a little at a time in a Wedgewood mortar, and ground together till it is a thick paste—when it is washed with hot distilled water until the water remains clear. It is then placed in an evaporating dish in a steam bath and dilute nitric acid added to cover the mass, and watched closely till all the mercury has been driven off, which leaves the gold in crystal form. This is washed with distilled *hot* water till no trace of acid remains. Then the gold must be placed on a soapstone slab and put into the fire, and slowly heated to redness, which drives off any impurities and anneals it. It is then fit for use. The crystal gold known under the name of A. J. Watts' crystal or sponge gold was brought out about the same time as that of Watt and Taft's. At first it was not a success, complaints were made that it discoloured in the mouth and did not make a perfect filling at the margins. This may have been due in part to bad manipulation, for being very spongy, the temptation was to use it in too large pieces, and it then would harden under the instrument before it was condensed. The makers of this gold have steadily improved it, until now it is said to be a very valuable preparation. Fletcher says "If a light spongy mass is required, the first part of the mercury may be removed by pure nitric acid without the assistance of heat, which would fuse an amalgam having a large proportion of mercury. An amalgam of six parts mercury and one part gold crystallizes in four-sided prisms, the whole of the mercury can be driven off from this by heat, leaving the gold in a light spongy mass."

I think the best known preparation is Watts'. Mr. Makin's preparation appeared to consist of crystal loosely bound by fibres, different to Watt's, which appears moss-like under the microscope as is seen in the diagram.



This form of gold is peculiarly susceptible to the action of the atmosphere, its adhesive properties being lost, and it crumbles under the plugger ; the adhesiveness is restored on annealing. It is specially useful for starting filling in shallow cavities on account of its packing dead and not rolling.

I propose to consider a few methods of manipulating gold in the workroom, such as the preparation of plate, solders, &c. These are generally purchased at the Depôts, the plate being rolled to different gauges and the solder prepared in different grades, but in the laboratory it is frequently found necessary to do a little melting and alloying.

The degrees of standard are expressed in carats (the dried kernel of the locust bean). In the carat there are four grains, and fractions are expressed in grains and eights of a grain. Standard gold is 22 ct. and consists of gold eleven parts, and alloy one part.

It being a very soft metal, it is necessary to alloy it before it can be used as a base for artificial teeth—silver and copper are the alloys used, 18 ct. and 20 ct. plate are the qualities most generally employed, and formulæ given in the text books for these are :

18 CARAT.

Fine Gold	18 dwts.	This contains 6 dwts. 6 grs. of alloy to the ounce, and fuses at 1995°F.
„ Copper	4 „	
„ Silver...	2 „	

20 CARAT.

Fine Gold	1 oz.	This fuses at 2002°F.
„ Copper	2 dwts.	
„ Silver	2 dwts.	

Wire is made by cutting strips from very thick plate ; after these have been annealed and rounded somewhat on the anvil, they are passed through draw plates. Wire is manufactured of various diameters according to the Birmingham wire gauge (BWG), No. 8 is ·165 in. or 4·19 m.m. in diameter ; No. 16 is ·065 ins. or 1·65 m.m. in diameter &c.

Both copper and platinum added to gold make it springy. The springs used generally are made from 16 ct. wire, for this and for clasp gold 16 cts. fine, take of

Fine Gold 1 oz.	16 dwts.
„ Silver	6 „
„ Copper	12 „

For clasp gold 20 cts. fine, take of

Fine Gold	1 oz.
,, Silver	1 dwt.
,, Copper	2 dwts.
,, Platinum	1 dwt.

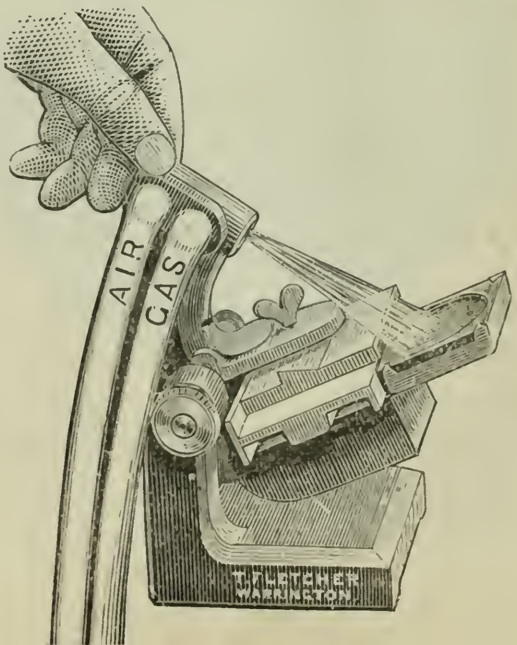
Some years ago attempts were made to deposit a sufficient thickness of gold to form a plate on the model by a current of electricity. The so-called "Electro Deposit Plates" were not a success, they took a very long time to prepare, and when finished had not sufficient strength to withstand the strain to which they were subjected in the mouth, being composed of the pure metal in a granular form.

I believe, however, that this system, or a modification, of it is made use of to some extent in America.

With regard to solders, that 16 cts. fine should be used for 20 ct. plate, consisting of fine gold six parts, roset copper two parts, and fine silver one part ; or 16 ct. gold twenty-four parts, silver eight, and copper six parts. The fusing point of these is about 1993° F. 15 ct. solder should be used for 18 ct. plate, this differs from the the 16 ct. (first formula) in having 1½ parts more silver and but ½ part copper, its fusing point is one degree lower.

Brass (seven copper to three parts zinc) is generally used, however, in place of the copper, as the zinc causes the solder to flow much more readily, some add one part of zinc to twelve parts of the gold for which the solder is required.

There will be no difficulty in treating scrap and filings especially where there is a gas supply ; in this case Fletcher, Russell & Co.'s admirable combined melter and ingot mould will be found sufficient for all ordinary requirements in most workrooms.



The makers say that a sound 3-oz. ingot can be obtained in about two minutes, and a 20-oz. ingot in five minutes, with the small and large size respectively.

One of the most useful forms of furnace I know of (other than gas) is a circular one of iron about 2 ft. 6 ins. high, and 14 ins. in diameter ; it is divided by the bars into a fire and ash box, the latter being about 8 ins. deep. With this a heat sufficient for crucible work may be readily obtained.

When filings and cuttings from repairs have to be dealt with, perhaps the best method of purifying is that recommended in Fletcher's "Practical Dental Metallurgy."

They should be boiled in a cast iron enamelled cup, with about three times their weight of strong nitric acid to near dryness, about one-third more acid is then added and the boiling continued ; when the acid has nearly evaporated the residue must be decanted off and the gold washed with hot water. "This gives a gold about equal in quality to the bulk from which the scrap and filings were made, and is both simple and certain in its results."

Sweepings should be sifted through a fine sieve, then placed in an iron ladle and heated to redness to remove organic matter ; after washing and passing the magnet repeatedly through them to remove traces of steel or iron, proceed as above, but if the quantity is too great to purify by boiling down, the following method recommended by Hunter may be employed ; to every 12 ozs. of sweep add 2 ozs. carbonate of potash and 1 oz. common salt ; put the mixture in a skettle pot and place in a furnace, after fusion keep up the heat for ½-hour, then remove from the fire ; when cold the pot may be broken and the gold is then found in a button at the bottom. This will be below the plate standard more or less, so to raise it fine gold must be added.

In Gee's "Practical Gold Worker" a flux of sal-ammoniac and charcoal in equal proportions is said to be much better than borax or salt, these latter substances produce a very liquid flux, which may run into the mould and produce holes on the surface of the ingot.

In melting, coal should not be employed as the gases given off tend to make the gold brittle.

When preparing plate the ingot must be annealed and the thickness reduced on an anvil, and care must be taken to reduce it evenly. If the alloy is less than 18 ct. fine, it must be more frequently annealed, quenching in methylated spirit is said to make it softer. The gold should never be quenched before it becomes black, as otherwise it will be brittle. A heavy pressure must be put on it when first passing through the flattening mills, as if this is not done it is said the outer portion will be stretched and the middle portion, not being affected by the rolling, cracking will result.

The English sovereign is 22 cts. fine, weighs 123¼ grs. and contains 113 grs. pure gold. Four contain 1 dwt. 17 grs. copper, and these may be reduced for 18 ct. plate by adding 3 dwts. 2½ grs. silver, and 1 dwt. 9½ grs. copper. 15 ct. solder is made with coin gold, of coin 144, silver 30, copper 20, and brass 10 parts.

Professor Watts' rule for reducing gold to a required carat may be mentioned with advantage, and is expressed thus :—

As the required carat is to 24, so is the weight of the pure gold used to the weight of the alloyed mass when reduced, the weight of gold substracted from this gives the quantity of alloy to be added. 7¾ grs. of alloy added to 1 dwt. of 22 cts. fine reduce it to 18 cts. To raise it to a higher standard Gee adds 13 dwts. 8 grs. of fine to the ounce of 9 ct. gold to make it 15 cts. fine. Richardson adds to each dwt. of 16 ct. one half dwt. of 22 ct. to raise the carat to 18. From this the amount of fine gold to be added to any alloy to make it of a higher carat may be calculated.

To ascertain the carat of an alloy, the proportions of the metals composing which are known, the rule is as follows : As the weight of the alloy is to the weight of the gold it contains, so is 24 to the standard sought.

Solder discolours in the mouth and sometimes on this account it may be considered desirable to coat a plate with fine gold. To accomplish this it may be suspended by a glass rod in a vessel containing a solution of gold and a plate of fine gold, to which is attached a wire coming from the positive pole of a battery : to the plate to be gilded is attached a wire from the negative pole. The solution must be kept at a temperature from 130° to 200° F. A solution recommended for dental purposes is prepared by adding 4 ozs. cyanide of potassium to one gallon of water ; a porous pot is filled with this, heated to 150° F. and placed in the remainder of the solution in a gallon jar. In the porous pot a plate of copper, attached to a wire from the negative pole of the battery, is placed ; in the jar is inserted a plate of gold with a wire coming from the positive pole attached ; action at once commences. The gold must be weighed before placing in the solution, and removed from time to time to ascertain the loss of weight ; when the quantity required for a gallon, which is from quarter to half ounce, is found to be gone from the plate, it is removed. I think the best battery to use, as it gives a constant current, is a Daniell with an E.M.F. of 1.08 volts, and an internal resistance of 3 ohms.

Mr. Dobbs has most kindly prepared the diagrams for me, and I conclude by expressing my gratitude to him, and in thanking you very much for your kind attention, trusting that you will not think I have entirely wasted your time.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Annual General Meeting was held on the 9th ulto., and was well attended. The President, Mr. Howard Mummery, M.R.C.S., L.D.S., in the chair.

During the course of the evening the officers for the ensuing year were balloted for and duly elected.

The minutes of the previous meeting having been read and confirmed, Messrs. David Thomson and H. W. Messenger were admitted to membership. Mr. Harold Stoner was elected an ordinary member, and Mr. Robert Hepburn, on the nomination of the Council, was elected an honorary member of the Society by acclamation.

The Treasurer (Mr. Thos. Arnold Rogers) presented a very satisfactory annual report.

The Librarian (Mr. Ashley Gibbings) read his annual report, in the course of which he stated that the number of members borrowing books was slightly in excess of the previous year.

The Curator (Mr. Storer Bennett) in the course of his annual report, said that having acknowledged and commented on the various specimens at the time of presentation, there remained nothing to add to this statement. Some seats had been provided in the museum which he hoped would contribute to the convenience of those studying the collection.

Messrs. Ackery & Colyer made a communication of considerable interest upon the subject of bone in dentine. Mr. Ackery said that it might be within the recollection of some of the members that at the March Meeting, 1891, he exhibited an upper bicuspid tooth having a root only two-thirds the normal length, and it was difficult to say whether its diminutive size was due to absorption or arrest in development. With a view to setting the point at rest, six sections of the tooth were obtained by Mr. J. F. Colyer (four transverse and two vertical), and submitted to microscopical examination. The vertical sections demonstrated the probability of the loss of the tissue of the root being due, Mr. Colyer thought, to absorption, but the transverse sections gave evidence of something unexpected and of much greater interest, viz. :—the presence of true bone in the dentine. All the sections showed tissues of a distinctly osseous character, but in one of them the dentine was replaced by true bone to such an extent that the irregular tissue was only apparent on that part nearest the pulp chamber. That the bone did not form part of the original structure of the tooth seemed probable. First, because the margin of it was distinctly cupped, and in the second place, there were few dentinal fibrils amongst the bone. It seemed probable that the dentine had been absorbed, the greatest amount of absorption having occurred at the base, and spread as far as the crown of the tooth.

A further specimen, that of a misplaced lower wisdom tooth, was also exhibited, showing absorption of dentine and re-deposition of bone, but the latter was not so well formed as in the first specimen.

With regard to the literature bearing upon the subject, Salter, in his " Dental Surgery," page 70, figured a specimen, the character of which was made doubtful owing to the coarseness of the drawing, but it certainly appeared more like a section containing a large number of pulp stones than Haversian systems, and the text, Mr. Colyer thought, pointed in the same direction.

Mr. F. J. Bennett, referring to Mr. Salter's book, remarked that Mr. Colyer had omitted to say that there were two figures, one showing the external, the other the internal portion of the tooth, and it would seem that they were executed by a draftsman not acquainted with dentistry. In one of them there were two minute holes on the exterior of the tooth just below the neck and passing into the pulp cavity. It should be recollected that Mr. Salter was a very careful observer, and he would hardly be likely to mistake nodules of dentine for true bone. They might, he thought, take it that Mr. Salter's observation was correct. He attached importance to the first figure because it gave the key to the explanation. He believed the growth was due to the process of blood vessels and cells passing from the osteogenetic layer of the periosteum as was shown by the three foramina which passed from the periosteum to the pulp cavity.

He believed this granulation tissue caused absorption of the walls of the pulp cavity when a deposit of true bone took place.

Mr. Storer Bennett wished to say that rather more than a year ago, as he had not at that time had an opportunity of seeing any specimens of bone development in dentine, he wrote to Mr. Salter to ask if he would allow him to examine the specimens, in his official capacity as Curator of the museum, and compare them with the pictures in his book. Unfortunately Mr. Salter's health at that time was so bad that it was impossible for him to find the specimens and place them at the disposal of the Society. He thought, however, that there was a hope that the question as to whether it was a case of true bone or of nodules of dentine might be some day set at rest, he quite endorsed what Mr. F. J. Bennett had said as to the three foramina passing at the side of the bone making a material difference as to the theory advanced by Mr. Colyer.

Mr. J. F. Colyer, without wishing to claim any credit for originating a theory, said that looking at the two drawings and reading the context he felt that the balance of evidence was in favour of the views he had expressed.

The President remarked, that the engravings were coarsely done, so that it was very difficult to feel very decided upon the matter, but they did not look quite like bone to him.

Mr. Sidney Spokes exhibited a vertical section through the jaw of a six months' old child showing the incisor just appearing through the margin of the gum, and illustrating the relation of the temporary to the permanent teeth. The section was ground down by Weil's process. Whether the condition had anything to do with rickets, Mr. Spokes was unable to say, but he thought it was suggestive. He also exhibited a companion specimen taken from the jaw of a monkey, showing the same relation at a later stage.

Mr. David Hepburn, remarking that at the last meeting of the Society some interesting examples of cemental union were shown, exhibited two abnormal geminated teeth removed from a gentleman aged fifty-six, who exhibited marked attrition with pulp ossification of incisors, canines and bicuspids. Some years ago he discovered a growth in the cheek at the posterior extremity of the left upper jaw, this causing irritation he consulted various dentists who advised the extraction of what was pronounced to be a wisdom tooth, erupting horizontally, ultimately this mass began to loosen, and after some years the patient was himself able to remove it together with the other mass attached to it.

Mr. ROUGHTON then read a Paper on

MICRO-ORGANISMS OF THE MOUTH.

The paper, which was elucidated by a large number of micro-photographs, thrown upon a screen, was divided under four heads, viz: (1.) The non-pathogenic organisms of the mouth. (2.) The pathogenic organisms. (3.) The effects of these organisms on the mouth and other parts of the body. (4.) Practical conclusions.

The human mouth presented very favourable conditions for the propagation of most organisms, there they found food in abundance and variety, the temperature best suited to their development (37°C.) equably maintained, and a sufficient supply of air for such as required oxygen. Wherever there was something worth having and nothing to pay for it, it was only natural to expect a crowd; and so it was in the mouth, for there germs simply abounded. Whenever we open our mouths to take in food, drink, or air, we admit at the same time a great many micro-organisms of different sorts, and it was only reasonable to expect that they, finding such comfortable quarters, should settle down and propagate. These considerations might lead to suppose that the human mouth would contain every single germ in existence; but "the struggle for existence," which was constantly going on everywhere, caused the stronger to prevail and the weaker to perish; thus it was that although over a hundred different sorts had been discovered the number of regular tenants of the mouth was very small, viz. about six. It seemed that the conditions in the mouth exactly suited these few bacteria, enabling them to crowd out all others; moreover, it was a strange fact they absolutely refused to grow outside the mouth on any of the artificial nutrient media known. If a small portion of the soft white matter which collects upon the teeth were spread out in an extremely thin layer upon a cover-glass and stained with an aniline dye, such as gentian-violet, a specimen of great beauty and interest, from a bacteriological point of view, would be produced. If examined with a one-twelfth oil immersion lens swarms of micro-organisms of different sorts and sizes would be seen, some being rod or thread shaped, some round or egg shaped, and others spiral or screw shaped. The rod-shaped organisms are in great variety, both as to length and breadth, some being jointless, others jointed transversely, both varying greatly in size. Notably, amongst the latter, on account of its dimensions, was the bacillus buccalis maximus, this was stained violet by iodine, whereas the former remained unaffected. Spherical organisms or micrococci, although perhaps as numerous, were on account of their smaller size less conspicuous than the bacilli and threads. They were sometimes in clusters, sometimes in chains, or tetrads, or pairs, or scattered singly. The pairs, tetrads, and chains when short, were sometimes enclosed in a transparent glassy-looking capsule. Spiral organims resembling a comma, had long been recognised, and had at one time been regarded as identical with Koch's cholera bacillus, but subsequent investigation had shown that, although much alike in morphological character, they differed in this marked respect, viz.: that whereas the cholera vibrio grew readily on gelatine, the comma bacillus of the mouth refused to grow anywhere but in the mouth. Clean healthy mouths were comparatively free from it, but it was found in large numbers under the margins of inflamed gums. When examined in its natural live state it was seen to be highly motile, and propelled by flagella or whip-like processes. Another spiral organism, supposed by some to be a development of the one just mentioned, but not so regarded by Mr. Roughton, was the spirochæte dentium, which occurred in the form of long wavy spirals of varying thickness and size of twists.

II.—The Pathogenic Organisms of the Mouth.

It had long been known that the human saliva was poisonous. This toxic property had been, from time to time, attributed to various causes, but it was not until 1881 that it was shown that it was really due to the presence of micro-organisms. About the same time Pasteur discovered in the mouth of a child suffering from hydrophobia an encapsuled diplococcus resembling the figure 8. Saliva containing these germs, when injected into rabbits, produced a rapidly fatal result. This he considered to be the specific germ of hydrophobia, but Vulpian soon afterwards produced the same symptoms and fatal result by injecting healthy saliva, and the same diplo cocci were found in the blood of the dead animals. A. Fränkel discovered the same organism in cases of croupous pneumonia, pleurisy, meningitis, otitis media, and other inflammatory processes. This important organism, now designated the micrococcus of sputum septicæmia, frequently occurred in the mouths of healthy persons in the form of encapsuled diplococci, which were not always easy to find under the microscope, but whose presence might be demonstrated by injecting some of the saliva into mice. This micrococcus would grow on culture media, but not readily. It required a temperature somewhere between 24° and 42° C., and a faintly alkaline medium.

III.—The Effects of Micro-Organisms on the Mouth and other Parts of the Body.

(*a*) *Local Effects.* Dental caries was nothing more or less than the devouring of the teeth by the micro-organisms of the mouth; the only conditions that the germs exacted were that the dentine should be exposed by removal of its enamel covering and decalcified by acids. In a perfect germless mouth there could be no caries. Sooner or later the decay (and the bacteria) would extend, if unchecked, to the pulp cavity, causing acute inflammation and perhaps gangrene of the pulp; the bacteria might then extend to the apical foramen, producing an alveolar abscess with its possible results, such as disfiguration of the face, necrosis of the jaw, spreading suppuration, septicæmia, pyæmia, and death. The various inflammatory and catarrhal conditions and ulcers about the mouth were to a large extent due to the action of bacteria. Mr. Roughton had no doubt that pyorrhœa alveolaris was produced in this way. The nature of the disease had been the subject of much discussion, some regarded it as purely local, others as entirely constitutional. He believed the truth was half-way between the two There were few, if any, germs which when placed upon a perfectly healthy uninjured mucous membrane could do anything but die. There were many obvious ways in which this lowering of vitality might be brought about in pyorrhœa alveolaris. Accumulation of tartar, slight gingivitis, injuries to the gum, &c., might be cited as local predisposing causes, whilst struma, gout, syphilis, rheumatism, and wasting diseases acted as constitutional predisposing causes. Germs were present in abundance in the pockets between the gums and the teeth, as any one might convince himself of by making a cover-glass preparation of the pus which oozed out on pressure. Miller had isolated twenty-two different organisms from twenty-seven cases of pyorrhœa, from which it would appear, that there was no one special germ which could claim this disease as its own, but that any of the pyogenic bacteria might produce it when the necessary predisposing causes have prepared the ground for it. In support of the view that pyorrhœa is a germ disease, Mr. Roughton instanced a case of his own at the Royal Free Hospital, in which a woman with very spongy bleeding gums, from which pus welled up on pressure, was cured in a week by the application of 1 in 2,000 perchloride of mercury soaked in cotton-wool. By all large operations on the mouth very favourable conditions were brought about for the entrance of germs directly into the circulatory system, and the abundant oozing of serum from the large raw surfaces left by the operation afforded additional culture medium for the growth of micro-organisms; the injury inflicted directly on the tissues diminished their vitality, and their power of resistance to septic infection, and the loss of blood (always serious in a large mouth operation) weakened the whole system and still further rendered it a prey to the ravages of invading micro-organisms. Not only after large operations, but after the extraction of teeth and lancing of gums, fatal septicæmia had occurred. It must also be remembered that there is risk to the operator as well as to the patient in the performance of an operation in an unclean mouth. Both local and general infection might follow injuries to the fingers by ragged teeth or dental instruments. Miller had recorded a case of chronic pyæmia in a dentist who injured his finger with a bur whilst clearing out a decayed tooth. The result was suppuration in the wounded finger, the axilla, the lungs and elsewhere, no less than 135 abscesses forming in the course of two years. The pus contained the bacillus buccalis septicus, an organism frequently found in the mouth.

In conclusion, Mr. Roughton urged the importance of endeavouring to obtain aseptic conditions of the mouth as far as possible before operating, and recommended that immediately prior to the operation, when the patient had been anaesthetised, the mouth should be well mopped out with cotton wool soaked in 1 in 1000 perchloride of mercury, and after the operation it should be frequently syringed with some milder antiseptic.

The PRESIDENT having thanked Mr. Roughton for his paper, said that the statement that saliva was injurious to the growth of pathogenic organisms seemed to him to want considerable proof, the contrary was the view generally accepted. With regard to the Finkler-Prior bacillus, he had always understood it was pathogenic. With respect to micrococcus tetragenus, Dr. Miller, who had injected the cultivation into mice, he believed, found it was seldom if ever fatal. Then, as to the question of pyorrhœa alveolaris, it was of course known that the ordinary organisms of suppuration were found in the disease, but it was still quite possible that the real cause of the disease was an organism uncultivatable out of the mouth. He would like to ask Mr. Roughton if he had seen mixed infection in the same tube? He (Mr. Mummery) had often seen mixed infection, but never two in the *same* tube. Having regard to the conditions of dental operations, he thought mopping out the mouth with perchloride of mercury would be a very inefficient means of sterilization. He did not think it would prevent the conveyance of organisms into the tissue during extraction.

Mr. STORER BENNETT wished to ask whether the slide illustrative of pyorrhea alveolaris was a cultivation or a cover-glass preparation. For invariably in his experience in cover-glass cases, one got an admixture of different organisms, whereas in the specimen exhibited it seemed almost entirely made up of micrococci. It was known that in many cases the organisms of the mouth were uncultivatable.

Mr. W. HERN wished to ask Mr. Roughton how he procured his pure cultivations of certain bacilli and micro-organisms he had shown them? He could hardly agree with Mr. Roughton's statement that "a perfectly sound and healthy person might be soaked inside and out with pathogenic germs without harm." He (Mr. Hern) would be very sorry to be soaked in—for example—the germs of syphilis. With regard to pyorrhœa aveolaris, they would like to know if Mr. Roughton had made any experiments as to the effect of germicides. In his (Mr. Hern's) experience he was obliged to confess that there was more to be done than merely applying perchloride of mercury on wool to the affected part before the happy result described by Mr. Roughton could be obtained.

Mr. HENRI WEISS said that Mr. Roughton had of course given undeniable proof of the micro-organisms existing in the mouth, but could he suggest a suitable antiseptic to use? In treating the mouth it was necessary to exercise more caution than in dealing with any other part of the body. In employing carbolic acid there was an element of danger. Perchloride of mercury very diluted might be used. If Mr. Roughton could recommend something which would dismiss the unwelcome guests of the mouth without injury to the gums, teeth or alveolar process, he should feel much indebted to him.

Mr. ROUGHTON in reply said, as to the effect of remedies in cases of pyorrhœa alveolaris, of course he was aware that this disease was often connected with an accumulation of tartar, and other causes lowering the vitality of the gum, he did not pretend that the antiseptic in question would remove tartar, or necrosed bone, or cause the sockets of teeth to grow, but it should be remembered that the case he referred to was in an early stage. In reply to Mr. Storer Bennett's question, the specimen was produced by culture on agar. With reference to the president's enquiry, he had not seen mixed infection in the same tube. With regard to mopping out the mouth, he made it a rule that the patient should clean the mouth as well as possible, and then immediately before operating he gave it a good scrub with the perchloride, he did not imagine it thoroughly sterilized the mouth, it did not sterilize the skin. Mr. Hern had asked as to the means used to obtain a pure culture, the method adopted was that known as the "line culture." Mr. Hern disagreed with him as to germs affecting healthy persons, and instanced syphilis, but he (Mr. Roughton) believed it was held that disease was not contracted unless there was an abrasion of some kind, he was still of opinion that a perfectly healthy person would remain unaffected by pathogenic germs. With regard to the danger of antiseptics, carbolic acid undoubtedly was dangerous used in the mouth, but seeing that the ordinary dose of perchloride of mercury was one drachm, he thought there was safety in 1 in 1,000.

The PRESIDENT then read his valedictory address, and said that he took it that the object of such an address was, that it should be a review of the work done, and the advances made both at home and abroad. The year had not been an eventful one for the Society, but he thought that good work had been accomplished. Having referred to the papers that had been read during the past year, and the casual communications, which he thought sustained the average of former years, both in number and importance, Mr. Howard Mummery drew attention to some valuable researches in connection with the teeth which had been made abroad. Dr. Morgenstern (of Baden) had described nerve terminations in dentine, enamel, and cementum, but his communication was only a brief preliminary one accompanied by no drawings, and in the absence of any fuller statement, judgment of this most important histological investigation must be suspended until the world was in possession of the full details in proof of his work. Dr. Carl Röse (of Freiburg) had made a research on the development of teeth, of considerable interest. By adopting Born's system of modelling, in which a solid model is built up in wax from a number of drawings of serial sections, drawn to the same scale and cut to a certain definite thickness, he is able to trace the course of the primitive tooth germ band in the fœtal jaw, with much more certainty than is possible with single sections. His results seemed to demonstrate that the temporary tooth germ did not give rise to the germ of the permanent tooth, as had been generally supposed, but that the tooth band grew obliquely backwards in the jaws, and after giving off a band dipping down to form the temporary teeth, continued growing backwards, and itself formed the permanent teeth. He has used the same method in examining the fœtal jaws of several classes of the mammalia with similar results.

Turning to matters more intimately connected with the internal working of the Society, the President spoke of his regret, which he said would be generally shared, at the resignation of their honorary treasurer, Mr. Thos. Arnold Rogers, referring in terms of warm eulogy to his long and valuable services. He congratulated the Society on the flourishing condition of its finances, and on having obtained so able a successor to Mr. Rogers as their late President, Mr. S. J. Hutchinson. It had been decided by the council to have, in future, an annual official audit, in addition to the usual one by the auditors appointed at the December meeting. Two vacancies having this year arisen in the trusteeship, by the death of Mr. Cartwright in 1891, and the resignation of Mr. Barrett, Mr. Forsyth and Mr. Alfred Woodhouse had kindly consented act to with Sir Edwin Saunders as trustees. The Council had this year undertaken the important work of revising their resolutions from the commencement, and the sub-committee appointed for the purpose, had devoted much time and attention to the matter ; several prolonged special meetings of the Council had been held for the same purpose. The Council had this year also taken the measure of copyrighting the " Transactions " of the Society. The list of new members for the year was an encouraging one ; thirty ordinary members had been elected and one honorary member, and there had been one re-admission. They had nine resignations, and three cases of removal of members for non-payment of subscriptions, and, as they heard, there had been sixteen new nominations read that evening. Having dwelt upon the loss the Society had sustained in the deaths of Mr. Vasey, Mr. Felix Weiss, Mr. A. Fothergill, Mr. H. A. Bevers, Mr. Cooke Parsons, Mr. T. M. Kelly, Mr. Richard White, Mr. Henry Moon, and Dr. Alfred Carpenter, an honorary member, the President proceeded to say that as the representative of the Society, he was invited to attend the funeral of a very distinguished honorary member, who had this year also passed away, viz. : Professor Richard Owen, who had long occupied a prominent position in the scientific world, both here and abroad ; the great industry and wide grasp of scientific subjects, which led him to such just and accurate conclusions in paleontology and comparative anatomy, pointed him out as one of the most remarkable men of the age. As a comparative anatomist, Professor Owen occupied a foremost position in the century. He never was willing to accept the doctrine of natural selection, according to the views of Darwin and Wallace, being wedded to his own theory of archetypes, but this was no hindrance to an amount of accurate work in all departments that was absolutely astonishing. Some idea of a part only of this work might be obtained, when it was remembered, as stated in a recent notice in the "British Medical Journal," that the list of his scientific papers in the Royal Society's catalogue, occupied twenty-eight columns. To the dental profession, his labours were especially interesting, for one of his greatest works was his "Odontography," consisting of two quarto volumes, containing 168 plates, a book remarkable as an example of accuracy. It was astonishing that with the imperfect methods of investigation known at the time, he should have produced a work which still stood alone as the authoritative text book on the subject of which it treated. As an example of his accurate knowledge and faculty for correct deduction, might be mentioned the forshadowing of the discovery of the fossil birds of New Zealand. From a small fragment of a long bone, which did not include the articular extremities, he stated his belief that a large bird of the ostrich family, but of a heavier build would be found in New Zealand. The discovery of the numerous remains of dinornis within three years, fulfilled his prophecy in every particular. Professor Owen's discovery of the toothed odontopteryx in the London clay, might also be said to have foreshadowed that most interesting discovery of the toothed birds of Kanzas, by Professor Marsh, of Yale College, and to have perhaps unconsciously helped forward the theory of natural selection, by affording one of the first important indications of the descent of the birds from reptilian forms. In the extensive biographies which had lately appeared, might be seen fuller particulars of this most interesting life. Turning aside from the sad episodes of the year, it was pleasant to note the ovation offered to M. Pasteur on his seventieth birthday, an ovation worthy of his fame and the cause of science which he represented. They all knew how Pasteur, from his studies in chemistry and fermentation, gradually built up the foundation of the modern knowledge of the causation of infectious diseases, and saw how, not contented with scientific demonstrations, he had carried the practical results of his discoveries into all departments of application. With M. Pasteur, science and practice had gone, as they always should do, hand in hand. The usual vote of thanks closed the meeting.

THE DENTAL RECORD, LONDON: FEB. 1, 1893.

"DENTAL EDUCATION OF THE PUBLIC BY THE LAY PRESS."

We admit the subject is a delicate one. In the current number of a leading journal it is discussed in a stain of approbation, the writer of the paper taking up the position that, given an intelligent public and an enlightened lay press, a dental millennium must quickly be brought about, and we have no doubt if these two factors are obtainable the thousand years of dentist's bliss must follow. It has been urged that lecturing to the ignorant on their daily sins of commission and omission in matters appertaining to their teeth by skilled and learned professional men would assist also in bringing about that most desirable consummation. But here again are difficulties. When one orator takes the carpet he is apt to find followers, all of whom may not be guided by the same altruistic philosophy which distinguishes the philantrophist. It is, doubtless, most desirable that the public should learn "the certain and infallible signs" which mark the honest exponent of scientific dentistry from the nimble-fingered quack, but how is this to be brought about by the use of the lay press? Could Mr. Walter Besant be induced, year by year, to publish a "Eulogy of Good Dentists;" or Mr. Andrew Lang be so far got hold of as to suspend at the "Sign of the Ship" the names of those who be "seemly honest men," "living clean lives" and practising first-class dentistry, something might be done. But, unhappily, the daily press, and we believe weekly and even monthly papers, will demean themselves by taking advertisements, and then all the mischief is done, for human and frail as even paper men are, they may consent not to puff inferior practitioners, but they will not refuse their subsidies by writing nasty rude things about them. The profession which does not advertise does not profit this venal press so much as the profession which does, and hence the leniency with which this same press condones professional puffs. It is rare that the journalistic "sons of thunder" run amuck with the express purpose of bettering an advertising firm, but they do so sometimes, as we know, and one can only on such occasions ascent the lofty pedestal of contempt which that great being, Miss Squeers, rose to when young Nickleby behaved as disgracefully to her "Pa". Of course people read all manner of papers, and these organs differ rather widely both in the matter of nicety of feeling as well as in grammar and in general information. A professional brother, of high repute, once found a glaring puff of an institution run on lines which no Egyptian monarch would have tolerated from even the favoured race. This appeared in a leading daily paper and was very good reading. He concocted a letter "rather in sorrow than in anger," and sent it off to the Editor, who, possibly, never got it, or is still waiting for time to read it. Anyway the letter written two years ago has never yet been published. Such things make one hopeless as to the feasibility of any plan in which the lay press is to regenerate or even educate the general public. The pressmen also are ignorant of professional matters, being, so to speak, mere children in the matters of their teeth and their digestion; they are of the general public, and so cannot appreciate the delicacies of professional shibboleths, unless with a special didactic mission they read up the subject and then exude on to paper what they have previously ingested. And the worst of didactic papers is that no one reads them, they are bought, as a rule, for children, who find them handy for making kite tails of, or even, if printed on good paper, are converted into little nautilus-like argosies! No, we fear the British, if not all other publics, must be taught the mysteries of good dentistry as they are taught the pitfalls of the bucket shops, by common sense or bitter experience. As a rule, any attempt to coerce patients out of their bent, and into our own operating rooms ends in hopeless failure. Leave the fool to his own folly is an old and a very wise saw; luckily there are enough sensible folks to keep scientific dentistry pretty robust, if there were not, the millennium of quacks must come, and no daily press or any other subtle means of advertising that "we be honest men" could save the profession. Protect us, legislate against all unprofessionable conduct an you will; but put not your trust in any lay press nor in any child of letters. Did the "Idler," the "Tatler" or the "Spectator" in the old days purify morals or set society at all straighter? yet that press seemed to take the fashionable vices of its time sorely to heart!

Dental News.

Liverpool Dental Hospital.

The Annual Meeting of the friends and subscribers to the Liverpool Dental Hospital in Mount Pleasant, was held yesterday afternoon in the Town Hall. The Mayor (Mr. R. D. Holt) presided.

Mr. W. L. Jackson, honorary secretary, read the 32nd annual report. The committee in that document say the total number of patients admitted since the formation of the hospital amounts to 298,182. During the past year the number of patients treated at the hospital has been 16,001 and of operations 20,776. The committee record with thanks a donation of £5 from the Earl of Derby, the president of the institution, also one of £1 1s. from Mr. Andrew Ralph, and others of smaller amounts; they have also to express their obligation to Mr. T. G. Evans, and a company of Liverpool amateurs, for the successful dramatic performance at the Prince of Wales Theatre, which resulted in a net balance of £50 18s. 4d. in aid of the funds of the institution, and to Mr. Alderman Oakshott for kindly undertaking to bear the expense of very necessary renovations in the general waiting room. The committee have to regret the death of Mr. T. E. Priest, who for many years held the office of honorary auditor. The vacancy has been filled by the appointment of Mr. J. Bewley, jun., chartered accountant. The patients voluntary contributions amounted during the past year to £62 17s. 8d. Many of the most delicate and complicated operations of conservative dentistry are performed in the evening, and as in these cases a good light is essential it is found that the present lighting arrangement is very inadequate to the needs of the operators. The committee have accordingly resolved to introduce the electric light, which will entail increased expense. It is hoped, however, that the next subscription list will show, by a substantial increase, that this much-needed improvement has the approval of the public. Six students presented themselves for their examination during the year, three passed their intermediate and three their final examinations, and were duly admitted "Licentiates in Dental Surgery" of the Royal College of Surgeons. The prize examination will be held at the end of the winter session, instead of in December as before. The thanks of the committee are due to the Committee of the Hospital Sunday Fund for their contribution, and to the medical, surgical and dental staff for their valuable services during the past year.

Mr. J. R. R. Scott (honorary treasurer) submitted the financial statement, which showed that the expenses, including a debit balance of £18 8s. 5d., amounted to £399 11s. 6d. The total receipts were £393 0s. 6d., leaving £6 11s. due to the treasurer. Amongst the items were annual subscriptions £135 5s., donations £8 2s., receipts from Hospital Sunday Fund £26, students' fees £105, and patients' contributions £62 17s. 8d.

OBITUARY.

Sir Richard Owen, K.C.B., F.R.S., F.R.C.S. Eng. (Hon.).

A patriarchal life has closed in love and honour: duty, labour, enjoyment in work, assisted by a grand constitution, have brought Professor Owen, the "Newton of Nature," in his ninetieth years to his well-earned rest. He is one of whom his country may be proud! On July the 20th, 1804, he was born at Lancaster. He served as a midshipman in the Royal Navy, leaving the service at the end of the war with America in 1814. His life really began with the study of anatomy and medicine in the University of Edinburgh. In 1825 he was a student at St. Bartholomew's Hospital, and after obtaining his diploma at the Royal College of Surgeons, he was for a short time in practice in the vicinity of Lincoln's Inn, where his genius was discovered by Abernethy and other eminent men. He still hankered after the naval profession, and on going to take leave of Dr. Abernethy, his late Professor, Abernethy cried out, "What is all this?" "Going to sea, Sir," was Owen's reply. "Going to sea, going to the devil!" "I hope not, sir." "Going to sea, you had better, I tell you again, go to the devil at once," reiterated Abernethy. "Come and see me at the end of a week." The result was an appointment at the College of Surgeons, first as assistant to Clift in

1828, then he became Conservator of the Hunterian Museum. His first duty was the preparation of a complete and accurate catalogue of the great museum of John Hunter. This work cost Owen thirty years of incessant toil, but he became the greatest anatomist of the age. It is contained in ten quarto volumes. For twenty years he was Hunterian Professor. He was by no means a specialist as to one class or group of the animal kingdom—nothing came amiss to him. Of nearly every animal of interest, he made full, if not the first dissections, marsupials, extinct mammals of Australia, South African reptiles, the now well-known trichina—the nautilus, the argonauta, the spirula, the apteryx, the giraffe, the gorilla, were amongst his friends, and he delineated them classically and exhaustively with an almost passionate fidelity. On British fossil reptiles he wrote four quartos. Twenty-five memoirs on the fossil birds of New Zealand, but time would fail to give even a bald enumeration of his writings and of his researches. The *Bibliographia Zoologiæ et Geologiæ*, published by the Ray Society gives information as to his books. His devotion to science could not be over paid by any honours showered upon him, but it is well to recollect that his merit was not unappreciated. In 1873 he was C.B., then made K.C.B. on his retirement from the British Museum; Brazil and Italy granted him distinctions. He possessed the Prussian "Ordre pour le Merite," and the French "Legion d'Honneur," the Royal medal, the Copley medal. He was an Honorary Fellow of the Royal Colleges of Surgeons, England and Ireland. Sir Robert Peel first placed him on the Civil List for a pension, and for forty years he occupied the delightful cottage in Richmond Park by the farm of her majesty the Queen, who with her family cherished for him a great regard. To Professor Owen the nation owes in great measure the building of the New Museum at South Kensington, which he lived to see opened to the public in 1882 and 1883. Also the extension of the Natural History Departments was mainly brought about, in the British Museum, while he was superintendent of that department, an office he held with vigour for twenty-eight years. Professor Owen loved to generalise, and many of his generalizations are now registered as truths. He was one of the first to point out that "no distinction was made between organs that performed the same duties, and organs that have the same structure; both were called analogous organs," this important general doctrine has been useful in the exposition of the theory of evolution. A hypercritic might assert that his life was too full of controversy, but it did not alienate his friends, nor perhaps lessen his admirers—he felt keenly, and doubtless expressed his opinions strongly. Professor Owen laboured during his long life *prodigiously*, he was possessed of a genial nature, and distinguished appearance, had many accomplishments, while his wonderful knowledge of comparative anatomy, and his important services as thrice member of a commission on subjects connected with public health and meat supply, cannot be too highly estimated. Through life he did his duty vigorously. His valuable additions to the comparative anatomy of the teeth are too well known to need repetition here.

WILLIAM FINLEY THOMPSON, M.D., D.D.S.

THE death of Dr. William Finley Thompson occurred at Durango, Mexico, on November 16th last, he having succumbed to an attack of yellow fever. Born in the United States some fifty-two years ago, he practised for a while in San Francisco, and eventually came to London in 1877. At first he had a house in Park Lane, and afterwards entered into partnership with the late Dr. Visick, Brook Street, who succeeded to the practice of the late Mr. Sercomb. Here Dr. Thompson and his partner were most successful for four years, when, suddenly and without much deliberation, they both decided to give up dentistry, and apply their energies to financial undertakings in America. Within a month their lucrative practice was sold and they were bound far West, eventually settling in Colorado. In less than two years, Dr. Visick returned to this country. As time passed by, Dame Fortune withheld her smile, and Dr. Thompson lost all the property he possessed. He was endeavouring to recover himself financially by the practice of dentistry in Mexico, when death overtook him, his wife and family being at the time in New York City. Shortly after Dr. Thompson came to London, he was induced to deliver at the National Dental College, a course of lectures on Operative Dental Surgery. That was a new departure in the teaching of dentistry in the United Kingdom, and his lectures and demonstrations were much appreciated by the students. The lectures, with many illustrations, were published in the DENTAL RECORD, and afterwards in book form. His ingenious method of treating abscessed teeth for replantation, by capping the apex of the root through which a gold tube was inserted for drainage, was the subject of a paper read before the International Medical Congress, 1881. As an operator he was most dextrous in cohesive work, accomplishing exceedingly difficult and large contour fillings with facility and rapidity.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

To the Editor of the "DENTAL RECORD."

DENTAL ADVERTISING.

SIR,—I enclose a copy of a petition to the General Medical Council, which has already received about fifty signatures, and shall be glad if you will find a place for it in your journal. If any registered dentist would like to sign it, and will get his neighbours to do so, I would ask him kindly to get some stout white paper, 10½ inches wide, and rule into three columns, for name, qualification (if any), and address, or send me an authority to add his name to the list. I think the General Medical Council will feel we appreciate their endeavours to elevate our profession, and will further relieve us in the manner indicated in the petition.

I am, Sir,
Yours, etc.,
HENRY BLANDY.

1, POSTERN STREET,
NOTTINGHAM,
January 7th, 1893.

PETITION OF REGISTERED DENTISTS OF GREAT BRITAIN AND IRELAND TO THE GENERAL MEDICAL COUNCIL.

May it please your Honourable Council.

WE, the undersigned registered dentists believe :—That a person who is registered as a dentist, is guilty of infamous, and disgraceful conduct in a professional respect :—If he conduct his practice by means of the exhibition of dental appliances or apparatus in an open shop, or in a window, or in a showcase exposed to public inspection ; or if he seek to attract attention by means of public advertisements, or circulars describing modes of practice, or patented or secret processes, or by the publication of a scale of professional charges.

We, therefore, humbly ask your Honourable Council to purge our profession from any such degrading persons by removing their names from the register, and also the names of any registered dentists who may be associated as assistants or managers with persons not themselves registered, who *trade* under the style of "Dental Institute," &c., and who are "covered," aided and abetted by the said registered dentists.

We further beg your Honourable Council to accept as proof of such infamous and disgraceful conduct, production of the advertisement or circular, photographs or drawings of the exhibits or signs, sworn to by at least two affidavits, and such testimony as would be conclusive in a Court of Law.

And your petitioners will ever pray, &c.

Name.	Qualification (if any).	Address.

Stout White Paper, 10½ inches wide.

⁂ We shall be glad to hear opinions expressed on this matter. Its importance and width render it worthy of a wide and full discussion.—Ed. *Dental Record.*

THE DENTAL HOSPITAL OF LONDON.

To the Editor of the Dental Record.

Sir,—The Medical Committee of the Hospital having reported to the Managing Committee about twelve months ago their opinion that the accommodation at present at the disposal of the Hospital and School was quite inadequate to the demands made upon it by patients and students, a sub-committee was appointed to take into consideration the various aspects of the question, and if necessary, to employ the services of an architect. It was found impossible to get property at the back of the hospital, and without that no alteration could be made which would put an end to the present condition of the impossibility of getting from one part of the building to another without using a room as a passage.

The architect, Mr. Keith Young, was quite emphatic in his opinion, that only by acquiring a new site and building a new hospital would it ever be possible for the Dental Hospital to possess a building worthy of its importance. He further pointed out that if a new hospital was built upon a new site, there would at no time be a cessation of the very important work carried on at the institution. Upon this advice the report of the sub-committee was drawn up and presented to the management, and considered at ordinary and special meetings of that body during many months; and at the December meeting in 1892 it was unanimously decided to acquire property on the south side of Leicester Square, and to build a new hospital upon that site.

The following, among other reasons, forced this conclusion upon a most careful management:—

That the waiting rooms were small, uncomfortable, and the men's department without proper sanitary accommodation.

That the operating rooms were small, and inadequate to the demands made upon them, while the entrance into the anæsthetic room was even dangerous.

That the dental appliance departments were unworthy of the institution, both for patients and for the students.

That the operating rooms were used as passages.

That notwithstanding the admirable façade of the present hospital, many parts of the building were only twelve feet deep.

That the hospital having been constructed by the alteration of old houses, the whole of the sanitary arrangements left much to be desired.

That no room in the hospital was fitted with hot and cold water.

That the hospital was imperfectly heated.

That the students had not proper accommodation in cloak room, lavatories, or sitting room.

That during the past twelve years there has been a large increase in the number of patients.

Cases treated in 1874, when the hospital was removed to Leicester Square	19,255
Cases treated in 1892	55,803

The difficulty that appeared most insurmountable, and prevented the Committee deciding to build a new hospital, was the question of funds, but when the members of the staff and a few friends promised nearly £4,000, it was decided upon the strength of this to make an appeal to the public.

A new hospital and site will cost quite £40,000, and the Committtee venture to point out, in making this appeal, the generosity of the staff and friends of the hospital, which may be taken as a sign of the *bona fides* of those promoting the scheme.

This hospital has always been the pioneer in the progress of the profession, which position it is to be desired it shall maintain.

In the name of the Committee of Management I beg to appeal for a liberal donation to the building fund, in order that no time may be lost in acquiring the site and erecting a building that shall be an honour to the dental profession and credit to the great city of London, and wherein shall be practised and taught the most thorough and scientific dentistry.

If I may introduce the personal element into this correspondence, I should like to say how much pleasure it would give me to see the names of all our past students upon the list, whatever the amount they may be inclined to subscribe.

Your obedient Servant,
The Dental Hospital of London. MORTON SMALE.

The following is the report of an architect, Mr. Keith Young, as the result of an examination of the present premises of the Dental Hospital :—

"After careful study of the question, I am forced to the conclusion that any scheme of reconstruction on the present site is out of question, and that the true interests of both hospital and school will be best served by rebuilding on a new site of sufficient area and with ample possibilities of lighting."*

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*We are compelled by want of space to omit list of contributors, until our next issue.—ED. *Dental Record.*

GOSSIP.

WE spoke about the Dental Hospital in Leicester Square last month, and we have now received a letter from the Dean, who gives us a long list of subscriptions, which we must regretfully hold over to our next issue. The beginning looks hopeful, and speaks well for the enthusiasm of the staff, and the past and present students. Whether an honorary staff should have to put their hands into their pockets is a question, the answer to which, probably, "no fellah can understand."

THE circular-letter hints that the staff contribution, like the churchwarden's decoy half-sovereign in the collecting plate at church, establishes the *bona-fides* of the collection. There is something in that. As to the necessity for the new hospital no one will join issue, and we have no doubt so laudable an object will meet with earnest support from "outside."

THE profession seems to be a little uneasy. You, dear reader represent the profession from your point of view ; your next dental neighbour represents the profession from his point of view, so that when we affirm the "profession" seems uneasy, we only mean that certain spirits have decided that "whatever is" in matters dental, are emphatically "is" NOT "best." The General Medical Council is a shameless body, it would seem which will not, and cannot, poor thing, do dental affairs justice for one reason, because its board does not contain a single dentist ! The reform suggested, as far as we can gather from paragraphs in the lay press and dark hints, is to go behind all our present legislation and start fresh with a dental council, and practically a dental autonomy !

THERE are no doubt many weighty reasons for all this, we being peaceable subjects, whose ken does not carry us into the surging seas of dental politics, cannot express any opinion. A *fidus Achates* of ours, who may be a foolish young person, asserts that there are so few dentists, (he is comparing them with the unwieldy brute force of the medical profession) that they all know one another so well, that the risk of personalities, narrowness, and cliquishness would be not inconsiderable.

Perhaps one of the most interesting and pathetic scenes which the rooms of the Odontological Society in Leicester Square have ever seen, was that enacted at the Annual General Meeting, when Mr. Thomas Arnold Rogers resigned the treasurership, but refused honorary membership, because he "preferred to help the Society as long as in him lay the power." The kindly words which the President so gracefully said were all, and more than all, merited by the recipient. Few will have come in contact with Mr. Rogers without feeling his charm of manner, his sincerity and high-minded disinterestedness, and none will deplore his resignation more than the colleagues with whom he has worked.

Speaking of the "Odonto.", we are pleased to learn that a former editor of the *Dental Record* has undertaken the editorship of the Transactions of the Society for which he in future will be solely responsible, as the old system of having a working sub-editor and an editor on the Council has been done away with, a reform which in such able hands as those of Mr. Lloyd Williams should prove very valuable.

Among literary items of notes, is the announcement of the publication shortly of a new text book on "Dental Surgery," by Mr. Morton Smale and Mr. J. F. Colyer; also a second edition of Mr. Underwood's useful little book on "Anæsthetics," which is intended *par excellence* for students in dentistry. From rumours which have reached us, it seems that dentists have been busy alike with pen as well as with plugger and forceps.

We published some time back some experiments made with a view to prove that the hypnotic trance could be advantageously employed in dental work and surgical operations. The subject has recently been revived in the *Times*, under the name of "The New Mesmerism," and Mr. Ernest Hart, in the *British Medical Journal*, raises a most vigorous counterblast in which he animadverts most severely upon the whole practice and strives to prove that it is dangerous physically, mentally and morally, and even regards much of the clinical phenomena of the French hospitals as worthless evidence as regards the supposed phenomena of hypnotism.

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Original Communications.

SOME CASES IN PRACTICE.

By W. SCOTT THOMSON, M.R.C.S. and L.D.S., Eng.

UNTOWARD RESULTS FROM THE USE OF ARSENIOUS ACID.

That able pathologist and excellent operator, Mr. Alfred Coleman, in his Manual of Dental Surgery, when dealing with the treatment of roots and the relative value of antiseptics, says "for some years we have employed arsenious acid, as with one application we have obtained more certain results than with ten or twenty applications of those above mentioned" (carbolic acid, creosote alone or mixed with iodine) " we simply clear out the pulp cavity, wash out with carbolic acid, and apply the arsenic precisely as if for destruction of the pulp, laying the application over the orifice or orifices of the fang-cavities and then filling over with oxychloride of zinc." In another place he writes "In cases when the patient cannot be seen for some weeks after the application of the arsenic" (for devitalization of the pulp) "it will be best, after placing it upon the pulp, to cover it with a concave metal cap and then fill over with Hills' gutta percha stopping ; cases thus treated often remain well for years." I know not whether this be common practice, but I have seen it recently advocated in several American Dental Journals, but in my hands it has only been followed by disastrous results. Case 1. Girl, aged about eighteen years, lower bicuspid, pulp dead and decomposed. The rubber dam applied and a small quantity of arsenic moistened with carbolic acid placed over pulp canal, filled with Fletcher's Porcelain. Result, acute abscess necessitating the removal of the tooth. Case 2, was that of a boy of twelve who had the pulp of a first molar exposed and aching, and was returning to school the same day. The parents refused to have the tooth extracted, so I capped the pulp with arsenic and filled with oxyphosphate. The pain ceased in a few hours but re-commenced in a week, and the tooth was ultimately removed. In this case not only was the operation a failure but the family ceased to be patients. Case 3, occurred in a lady of about twenty-five years of age who was leaving for a remote village in Ireland, the name of which I dare not attempt to spell, and where no dental assistance could be obtained. The first and second bicuspids on one side both had exposed pulps. The proceeding adopted was as in the previous cases. Six months later she sent me these two teeth which had gradually become loose and fallen out without giving any pain. They were quite destitute of periosteum. While on this subject, I may mention a case which, however, is not quite analogous, where I put an arsenical dressing into a canine of a man thirty years of age, removing it the next day. The tooth was not tender, so I proceeded to adjust a Richmond crown. The root in a few weeks became loose, and in three months dropped out while eating.

A Recalcitrant Patient.

A boy of sixteen years had such prominent upper incisors that they overlapped the lower lip, and were each year getting worse. The laterals were extracted and a vulcanite plate constructed with a piano-wire spring passing round the incisors. A fortnight later when the patient was seen no improvement had taken place, yet he assured me he had only taken out the plate to clean it. Small pits were now drilled into the buccal surfaces of the first molars and the plate fixed with gold screws. I had my suspicions about the *bonâ fides* of this young gentleman, which were confirmed, for I watched him out of the house when I saw him tugging with both hands to get the plate out. 'I have done you this time' said I to myself, but when he turned up a fortnight later, to my chagrin, I found there was no change for the better. However, the mystery was soon cleared up, for the projecting ends of the screws were flattened and battered, and he had evidently not only succeeded in getting the plate out but was clever enough to put it back and screw it up. That time I cut off the ends of the screws and everything went off swimmingly till the deformity was completely cured, when the screws were drilled out and a retaining plate fixed in a similar way.

Late Eruption of a Bicuspid.

Somewhat over five years ago I adjusted a gold crown to an upper molar of a patient, a lady about fifty years of age. There not being sufficient of the tooth remaining to allow of a collar, three dowels were inserted in the roots and the crown fixed with oxyphosphate. All went well till six months back when the crown came off and the patient wished its replacement, and stated that for the past three months it had seemed too long. Examination of the mouth showed the presence of a bicuspid jammed in between the anterior buccal and palatine fangs. The treatment was the extraction of the molar roots, and the bicuspid is now fairly well taking up its proper position in the arch.

RECTIFICATION OF THE V-SHAPED MAXILLA, DETAILS OF AN AUTOMATIC REGULATING APPLIANCE, AND AN IMPROVED METHOD OF BANDING TEETH.

By Frederick Sleep, L.D.S.

In the June number of the "Dental Record" for 1890, may be found an illustrated paper under the rather lengthy heading "Simplified Orthodontia by Zigzag, Spring and Shield, with special reference to its application in rectifying the fœtal angle, V-shaped arch, and contracted alveolar or palatine processes of the maxillæ."

The case and treatment then considered and exemplified was that of a very pronounced saddle-shaped mouth. To completely verify the method advocated, I was on the look-out for a V-shaped mouth, but failed to get a sufficiently typical one in time to follow immediately. The following may, therefore, be considered as a tardy complement of the aforementioned thesis to which I beg to refer an interested reader.

The patient having the mouth, illustrated in fig. 1, ("a 7 months' child") was a delicate young gentleman from the Plymouth College, aged 12, exhibiting the usual characteristics, a pinched appearance

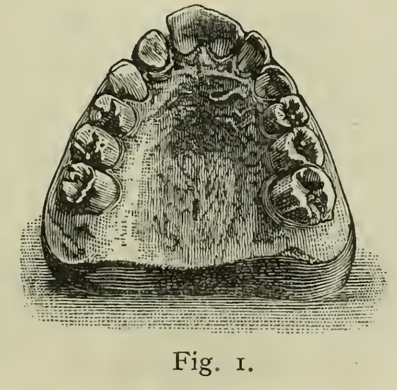


Fig. 1.

at the canine fossæ, and consequent expressionless countenance. The alveoli meeting in converging lines terminated sufficiently forward under the nasal spine to form with the labial faces of the lower incisors, when viewed beneath, a well-formed triangle. The first molars being badly decayed, I extracted them under gas. The new group of teeth having established themselves naturally in the positions shown on the model, the impression was taken, the model painted with a solution of rubber in chloroform, allowed to evaporate and a piece of rubber, previously cut to pattern, softened and adapted over the side teeth and entire palate by the wetted fingers. The shield and its opposite were then clearly and broadly cut out with a hot knife, embracing the canine and bicuspid on each side, and pieces of dental spring, having extremities somewhat flattened by hammer and stuffed with cotton wool, adapted to rubber. To save room, the equi-symmetrical half of fig. 5 is illustrated. The teeth on both sides being brought into position by an expanding plate out of the mouth in the direction required, another plate, *vide* fig. 6, enclosing the bicuspids and canines of each side, brought those teeth to the normal position indicated on the completed model, fig. 2. Not being able to attach my zigzag bow (illustrated in fig. 7) whilst the shields were operating, I hitched on the piece of spring carrying T-piece, and having pushed the extremity between the centrals, by squeezing the spring together with pliers, they were soon brought to face squarely. The third and last plate served alike to complete the modelling of the front teeth and as a retainer, and to this plate, a zigzag bow, I would invite attention, for though exactly similar in principle to that previously illustrated, it differs somewhat in construction and offers two improvements.

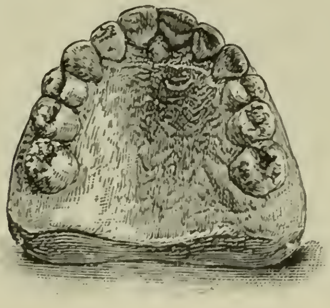


Fig. 2.

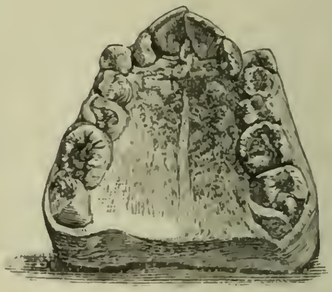


Fig. 3.

It is acknowledged that capping the teeth should be avoided when possible, or abandoned as soon as convenient, for that the capping invites decay to the lover of saccharine is unquestionable, besides which, digestion and the "bite" also are likely to be disturbed. To obviate this defect and yet preserve simplicity of construction, two pieces of steel knitting needle wire were turned and sunk, one on each side of the thickened labial flanges of rubber, the terminals being bent over the tuberosities at the back of the molars, as exhibited by filing down the wing on one side, fig. 7. Near the terminations of these wings were inserted the second improvement for retraction—viz: a *laced* zigzag, which, although made of gold wire, finer than that previously used, proved itself equally as effective, and more easily bent at any particular point without the chance of disarranging any other part of the bow, a defect which in the former unsupported appliance I had learnt to overcome by using a second pair of pliers to hold the contiguous part. This I now found unnecessary, the interlacing wires strengthening the bases of the toes of wire, and so allowing the apices to be bent or twisted in any direction required. If the lacing be studied a moment, it may be conceded that it does not mar another valuable feature in the older appliance, that of contraction, which was made free use of in this case.

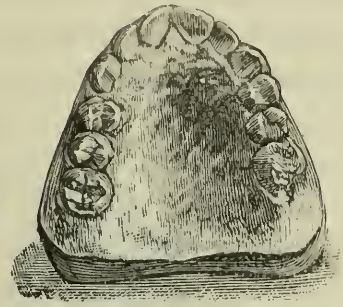


Fig. 4.

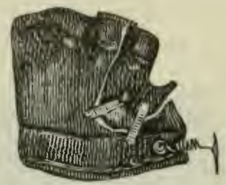
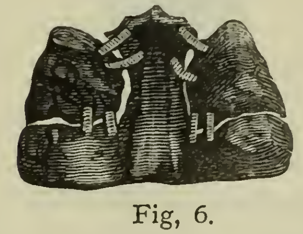


Fig. 5.

The stiffening wire was simply laced in and out the bases of the toes, first in one direction, then over it backward in the reverse as shewn in a straightened piece by the side of fig. 8. To contract, it was only needful to insert the nicked points of a fine pair of pliers at the bases of the toes, and squeeze together out of the mouth. The gold wires, being free and unannealed, were firm, yet easily crimped closer together, and the case pleasantly brought to the completed state, fig. 2, every tooth being modelled by the wiry Briaræus into perfect symmetry.

Concerning methods advocated for reducing the V-shaped jaw, irrespective of Dr. Coffin's great advancement, to which I adverted in my last article, that of Dr. Jackson's, perhaps the best of them, is to extract two sound members, the first bicuspids, and having passed two repressing wires through the interspace, the front six teeth are retrograded. As may be anticipated (*vide* January *Cosmos* for 1891) there is an objectionable separation where the wires passed through.

Another, a torsion method, although exemplified as from the worthy Kingsley himself (Guildford, page 154) is to me, considering that apparently neither extraction nor expansion seems advocated, to say the least, obscure. The writer's experience in the cases illustrated leads him to hope that a judicious application of the expansion shield, and extraction by spring, zigzag, or both, will be found capable of correcting alike, the saddle-shape and V-shape maxillæ; perhaps the greatest difficulty the educated dentist has hitherto encountered in his whole professional routine.


Fig, 6.

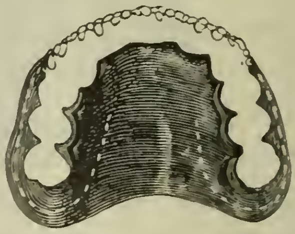


Fig. 7.

Before presenting the next case of irregularity, the reader must excuse a digression which I hope may prove profitable. The simple zigzag conformed completely around a bicuspid or molar and soldered together at its free ends may be used with great advantage to band teeth mounted on a narrow plate. An irritable gentleman failed to wear with security, or ease, a broad gold plate carrying the stereotyped form of clasp. The crowns of the retaining teeth (the bicuspid on each side) had been as usual somewhat bell-shaped, one holder, however, had, decayed during disuse of the artificials. Having fitted a gold crown to the root, I determined instead of telescoping it and fitting the ordinary clasp to the other, to try the virtues of such ones as I have described. Being fitted and soldered to a stiffened gold plate bearing tube teeth they exhibited greater adaptability, pliancy, grasping power and capacity for instantaneous contraction and expansion at any point desired. The result was declared a success.

The next case for comment may possibly offer a novel feature, and is, as far as I know, the first attempt to exemplify a self-regulating check appliance, a corrective instrument that should automatically effect just what regulating was required, and having done that much, retain the teeth in their desired positions. The patient, a highly educated young lady of thirteen, daughter of a clergyman, presented the mouth exhibited in fig. 3. Having extracted the decayed upper first molars under gas and allowed a little grace for the gums to heal, the plate shewn in fig. 8 carrying compo springs affixed to swivel bolts was applied to pull back the bicuspids and canines into the spaces. The figure shews the capping partially filed off on one side and the spring fitted to first draw on the second bicuspid. The other side having been previously completed on similar lines. The retracted teeth were bound to one another by tying the very fine iron wire (sold on cotton reels) first around one tooth, then around the next. At the same time two pieces of gold wire were brought to play against the inside corners of the laterals. The young lady's attendance, however, became so precariously irregular, that I began to despair of success. Getting weary of the matter, necessity prompted me to devise an automatic appliance, with the result that I determined to saw the teeth off the model, arrange them regularly with sticking wax, apply rubber solution to the altered model as before explained, bend a hard gold wire to conform to the anterior faces of the remodelled plaster teeth, and fix its terminal ends into springs, which in their turn were to be fixed to swivel bolts. As for the inside, a double shield made as before described and connected as shewn (fig. 9) with U wires was devised to effect the internal modelling. The appliance is self-explanatory to any practical follower of the craft. The teeth were caught between two spring traps touching only the aberrant prominent portions at both front and back. Moreover, they worked for one object—to recover their former position, which of course could be accomplished only when the teeth were conformed to the altered positions indicated on the manipulated model. When next seen, the posterior surfaces of the teeth, (*vide* fig. 4) were resting snugly in the spaces moulded to the re-arranged backs of their plaster counterparts.

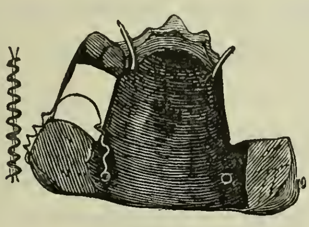


Fig. 8.

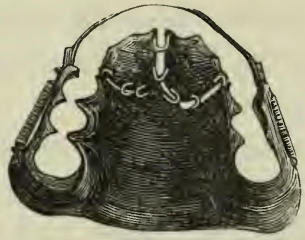


Fig. 9.

Though prefacing my former article by intimating I had neither extensive opportunity nor scope for systematic theorising, an experience, perhaps limited, has led me to formulate something like an opinion, and I advance it for what it is worth, laying no claims to precedence nor infallibility. We are told at times that this or that group of teeth erupted at a certain time, leaving others to deviate, and causing characteristic shaped dentures. But why did they erupt with such vitiated tendences as to form such symmetrical irregularities. One case has been under my observation where all the temporary teeth were lost before the eruption of a single permanent one, yet without superabundant space there was neither prominence nor irregularity. Sir John Tomes likewise mentions another such a case.

Then we have mechanical theories advanced, and very ingenious ones too, where labial and digital suction, action of the buccinators, &c., appear as prime factors. But so many grave and striking cases occur where apparently all those agents must be eliminated, that they are to be taken as occasional rather than the constant attendants on the deformity.

Intending merely to generalize, let me briefly state that the worst case of cleft palate and lip I ever witnessed belonged to a poor waif, who had been, as I accidentally learnt, begotten and formed under distressing circumstances.

Again in the two worst cases of saddle-shaped mouths. The first belonged to a young lady whose mother, during gestation, stumbled over a bucket left on the stairs by a careless servant and fell a considerable distance. And the other was one whose mother died of chronic alcoholism leaving the subject very young. In the former of these two saddle-shaped mouths the enamel was nearly absent, though the preceeding children and the parents had well formed teeth and arches; as likewise had the father and former children in the latter case.

In these subjects is there not substantial ground for suspecting a fundamental nervous disturbance with deficiency or arrest of formative process of the base, producing the tendency to the fœtal parallelism indicated formerly by Tomes.

We are told by leaders that children not being born with teeth› irregularities cannot be congenital. But why, if not chiefly congenital and hereditary, is there such a blind impulse for rectified dentures to struggle back to the model nature seems to have determined.

There are no accidents in nature, neither can there be an effect without an antecedent cause, whether that effect be shewn in decay of a group of teeth formed at a specified time, hasty evolution of another, arrest of interstitial development, diminution of the base of the upper jaw, or shortening of the body and rami of the lower one. The causes then are predisposing, vaguely characterised as "constitutional." Our philosophy at present is based on a very dogmatic material plane; yet we are all inclined to act intuitively. We fix "temperament," another vague term, on certain bodily characteristics, and roughly take a man's physical, moral and intellectual measurement spontaneously. We are attracted by real unsophisticated beauty, and repelled or feel a pity for pure unmitigated ugliness and deformity. The butterfly was among the Greeks the symbol of the soul, whilst the creeping thing from which it progressed in the course of its metamorphic evolution must inately and for ever create dislike. It is fashionable, however, for the learned to consider man in his entirety a material automaton—to ignore anything beyond—and then to *act* as if they discredited it. And wherefore, because they intuitively recognise the material form as merely the correspondent of a potent spiritual counterpart that will not be denied in the external manifestation of its building and ancestry. In our externals we exhibit hieroglyphic evolutional history, controlled, directed and modified by the circumstances under which we and our forerunners were nourished and environed, bodily and mentally, by chance or compulsion.

Neurotic weeds and wasters marry or intermarry. What can be expected?

The writer has never seen the cranium belonging to the V or saddle-shape individual reach above the average size. In the male the circumference has rarely reached 21 inches. The lower jaw too though modified by functions (previously perverted) may generally be predicted as stunted in body and rami.

Besides physical deformities and disabilities, the mental results will with rare exceptions be according to the moral and intellectual bent of the parents, and may take the form of unhealthy genius, egotism, hysteria, neurasthenia, cowardice, selfishness, manias, religious or otherwise, lying and want of self-control generally, leading the victim too often to vicious stimuli and narcotics.

American writers have considered that before long the specialism we practise, must from its growing complexity be still further specialised—Orthodontia being the first to demand a separate and individual attention.

Believing the idea to be a practical one only as regards cities, the provincial practitioner will feel little interest in this question. But a much greater one in replacing volumes studded with multifarious and complex devices by such short and practical ones that the worried assistant may readily comprehend and carry out in conjunction with the every day duties of an average laboratory.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Ordinary Monthly Meeting, February 6th, 1893, the President, Mr. Bowman Macleod, L.D.S.,Ed., was in the Chair, and there was a large attendance of members and several visitors.

The minutes of the previous meeting were read and confirmed. The President said that the Council had recommended Mr. W. Imrie, of Paris, for election as an honorary member ; he had been for many years connected with the Society, and had at one time been its Vice-President, he had now retired from practice. Mr. Imrie was elected by acclamation.

Mr. H. E. Goddard, of Nottingham, signed the obligation form, and was duly admitted a member.

The following were ballotted for and elected members of the Society : Messrs. E. H. L. Briault, W. T. Trollope and F. W. Bennett.

Mr. F. W. Richards, of Birmingham, was nominated for membership.

Mr. J. Mansbridge communicated two cases with models, one of imperfect eruption, and the other retention of temporary teeth late in life.

Mr. W. E. Harding narrated an interesting case : A woman during sleep in her chair after supper swallowed a gold plate carrying seven teeth, she woke suddenly with a sense of suffocation, and the difficulty of breathing increasing, a medical man was sent for, but on his arrival he was not made acquainted with the fact that she wore artificial teeth. He introduced a probang into the stomach, and no doubt in doing so dislodged the artificial piece from its position so that the obstruction to respiration was removed to an extent sufficient to allow of the patient breathing more comfortably. He then left, but visited her every day for a week, during the whole of that time, however, he was not informed that she wore artificial teeth. This went on for three weeks, and the medical man was ultimately dismissed, he being under the impression that the condition was due to spasm. The patient then came to Mr. Harding, and saw his colleague, with the object of having some new artificial teeth to replace the lost ones. They suspected that she still had the lost teeth in her throat, and advised her to go to a medical man, she did not do that, however, but contrived herself to remove the plate from her throat through the mouth by means of the fingers, having managed to get the nails under one of the bands. It was a remarkable fact that no ulceration resulted from the plate being so long in the pharynx. It transpired that the woman's objection to seeing a surgeon was that she was afraid she might be "cut about."

Mr. S. J. HUTCHINSON suggested that it would be very interesting if they could have a life-size illustration of the plate to put in the "Transactions."

Mr. Quinby supported the suggestion, which was adopted.

Mr. ALBERT mentioned a case of subluxation of the jaw, the patient, a man aged 42, being present. Mr. Albert was neither able to assign a cause nor suggest a remedy.

The PRESIDENT then read his Inaugural Address.

THE PRESIDENT'S INAUGURAL ADDRESS.

The PRESIDENT said: He had accepted the office gratefully, not as a tribute to his own merits—for he was sufficiently conscious of his short-comings—but as an expression of the respect and appreciation of the Odontological Society for their professional brethren north of the Tweed. Although the first resident practitioner in Scotland upon whom the distinction had been conferred, he was by no means the one who had done most to earn this acknowledgment at the hands of the Society, and he begged leave for a moment to refer publicly to two men of his own city who would have done the office more credit. That neither Mr. David Hepburn nor Mr. Andrew Wilson were in the Presidential Chair was not, however, the fault of the Society, for in the former case infirmity, and in the latter an excess of diffidence, had alone stood in their way. Both had rendered invaluable services to the cause of dental progress in Scotland. As to what should be the chief topic of his address he felt in some difficulty, for a survey of the field brought home to him the fact that almost every department of scientific research in connection with their profession had been explored and exhaustively dealt with in the addresses of previous Presidents ; he would add that the nature of his work, and the extremely limited time at his disposal between his election and the delivery of the address, prevented his venturing into scientific research with any expectation of a result worthy of the Society. It might not, however, be uninteresting to them if he asked their attention to a subject which had not been previously dealt with, and with which he was not unacquainted, viz. :—The growth of dentistry in Scotland. To trace its rise and progress in that country it was not necessary for practical purposes to go further back that 1760, or thereabouts, when Mr. James Rae, a member of the Incorporation of Surgeons, would be found practising dentistry in Edinburgh. He acquired a more than local reputation, and was the first to rescue the practice of dentistry from the hands of the artificer and place it upon a successful and medical basis. As evidence of his position and skill in general surgery, as well as in dental surgery, it might be mentioned that in 1779, and for several years afterwards, he delivered two separate courses of lectures in each year at the Royal Infirmary, thus becoming the founder of the clinical side of surgical teaching. His younger son, John Rae, who succeeded him, had even more skill, and acquired a more brilliant reputation than his father ; he also was a member of the Incorporation of Surgeons, and, after it became a Royal College, was its President in 1804-5. He was certainly the most skilful and scientific dentist of his day. He died in 1808. From this time forward the improvement in the ranks was, if slow, steady and substantial. Robert Naysmith might be regarded as the direct successor of the Raes, and was a man not only of great devotion to scientific studies, but of pre-eminent ability. He was born in 1791, and early commenced the study of medicine under Dr. Barclay. Having gained the L.R.C.S.,Ed., he completed his dental training and commenced practice in Edinburgh, becoming a Fellow of the Royal College in 1823. He was not only a skilful dentist but a skilful surgeon, and was frequently found acting as right-hand man to Wardrop, Lister, Syme, and Ferguson. Naysmith died in 1870. From the time of the Raes until about three-quarters of a century later dental education was confined to private and voluntary effort, but in 1856 a definite attempt to place the subject on a sounder and better basis was made by Dr. John Smith, who in that year commenced a course of lectures in dental surgery in connection with the Royal College of Surgeons. This was supplemented by a course of clinical instruction, until in the year 1860 a special dental dispensary was opened in Richmond Street. From this period, so far as Scotland was concerned, the uninterrupted growth of the educational movement might be dated. These lectures paved the way for the establishment of the kindred, but not rival, Society to that which he was now addressing—he referred to the Odonto-Chirurgical Society; limited in its membership, it had yet played its part nobly, and done much for the common cause which all had at heart. The idea of such a Society for Scotland was first mooted by Dr. John Smith in 1865, in which year he prepared and submitted to several members of the profession a constitution and bye-laws, but the scheme did not meet with the support anticipated, and lay dormant until revived by Mr. David Hepburn in the year 1867, when it was successfully launched and became an accomplished fact. From that time until now it had shown an unbroken record of stated meetings, where the interchange of thought, and the free presentation of experiences, had consolidated, exalted, and expanded the power of the profession for good. Robert Naysmith was its first President, but ill-health prevented his ever occupying the chair. The first paper laid before the Society was read by Mr. Williamson, late of Aberdeen, on the "Breaking Strain of Vulcanite," a subject which at that time was novel and of intense interest. When the Dentists' Act was passed in 1878, Scotland was found ready for its reception, and a meeting having been held under the Presidency of Sir John, then Mr. Tomes, on October 6th, 1877, the Royal College of Surgeons, Edinburgh, was induced to institute a Licentiateship in Dental Surgery. The Dental Hospital and School were opened in November of the same year, and had continued to develop ever since. The increasing number of its students and patients had necessitated more than one remove, and now they were about to build a Hospital and School fitted with all the modern requirements of a great teaching institution, and he hoped worthy of the profession and of the City of Edinburgh. And now passing the local limits, which he had prescribed for himself, and taking a wider view, he saw in all directions reasons for encouragement and cheerfulness, as far as the future of the profession was concerned.

The seed sown by their forefathers was bearing good fruit, all the world was awakening to the fact that dentistry is more than a handicraft, and that general culture and medical knowledge, as well as special training, were absolutely necessary elements for success, and these facts were being recognised by the public at large. The outgrowth of such a conviction was shown in the increasing importance of such Societies as theirs, and their endurance could only be ensured by the members uniting themselves together in the all-embracing bond of the pursuit of truth. The mysteries of nature were no longer sacred, and awe-inspiring secrets to be let alone. but shrouds of ignorance would provoke to honest painstaking endeavours to remove the barrier. Each man then to his post, each Society to its own domain, and theirs be the endeavour to make more perfect the application of their own speciality, by removing the barriers which stood between the perfect knowledge of the genesis and growth of the teeth, and the etiology of dental disease› In this connection he could not emphasize sufficiently the importance of the original investigations and observations on the growth and nature of dentine by his predecessor in the Chair (Mr. Mummery), and he trusted that he might be spared to continue and complete his investigations. The subject of anæsthesia, and the relative subject of the various anæsthetics and their physiological action, had received much attention of late, and much good had resulted thereby, but the President thought that this good might still be further intensified if the invitation of the Committee on Anæsthetics of the British Medical Association was responded to largely, and without bias, by the advocates of the various agents. In conclusion, he would venture—without attempting to develop the idea in detail—to suggest the appointment of a travelling fellowship, the holder of which after visiting a selected number of the chief colleges of Europe, America and the Colonies, might upon his return devote a certain portion of time to giving post-graduate lectures and demonstrations in the chief cities of Great Britain and Ireland.

Dr. MAUGHAN then read his paper on

"REMOTE PAIN IN DENTAL DISEASES."

Dr. MAUGHAN said, it had been truly said that every practitioner of dentistry, and of general medicine, constantly met with cases of obstinate and inexplicable pain, the cause of which it was impossible to trace, and which yielded to no therapeutic methods; but fortunately these cases were becoming fewer year by year, and were constantly being elucidated by the advance of physiology and pathology, both of which branches of the healing art had made such strides during the last few years—thanks to the work done by Ferrier, Horsley, Beevor and Schafer. Remote pain in any disease was of common occurrence, but the descriptive details were still both scanty and inexact. The surgeon, when a child complained of pain in the knee-joint, would invariably examine the hip, for his experience taught him that one of the earliest evidences of morbus coxæ was the existence of pain in the knee. Pain in a testis might in fact alternate with pain in a tooth, and again, who would say why the uterus should painfully contract while a mother is suckling her infant? In the case of ulcer in the stomach, or disordered liver, one found pain in the interscapular space or over the right shoulder blade. So to dentists it would be important that they should be familiar with the nervous phenomena caused by a dental lesion, as it would also be interesting to them to trace cause from effect, or *vice versa*. The fifth cranial nerve supplied the teeth, its second and third branches going to the upper and lower jaws respectively, so that a branch of that nerve would invariably be effected in a case of dental irritation. Two of the chief duties of a dental nerve were to convey trophic fibres downwards, and sensory messages upwards, the messages constituting a species of energy varying in vehemence. Histologically there was no distinction between a motor and sensory nerve fibril. In travelling brainwards along any dental nerve they would observe a ganglion,—Meckel's belonged to the second, the otic to the third division of the fifth—these were local government centres, each supplied with a sensory, motor, and sympathetic root, conferring certain specific properties which were dispensed by its branches; but the roots of these ganglia were under the control of an imperial power, and the sensory roots sent their feelers to the nerve centre at the base of the brain. The gasserian ganglion on the root of the sensory fifth was analogous to the ganglion on the posterior roots of the spinal nerves, and one of its main functions was to govern the nutrition of the fibrils that passed through it. In considering the centre of the fifth nerve, two things impressed one, first the extensive origin of its fibres, secondly the straggling character of the cells that constituted this origin. The highest fibres arose from a group of cells close to the third cranial nerve, whereas the lowest were tracable as far down as the level of the second cervical vertebra. In the interval between these two points, the fifth nerve is in intimate relationship with every cranial nerve, from the third to the twelfth inclusively, as also with the sensory spinal nerves lower down. It was interesting to note that those fibres which travelled downwards to the spinal cord degenerated when their connection with the ganglion was severed. For the appreciation of pain the sensorium must be intact, and the path downwards to the energized cell unbroken ; it not unfrequently happened, however, that pain was not correctly localized, and in many cases no previous history could be obtained to explain away the difficulty, *e.g.* a first bicuspid might cause a great deal of pain, but after devitalising the pulp and inserting an appropriate filling, the patient would cease to suffer ; a few years later, however, severe pain might be felt in the same tooth, and yet be due to a carious molar further back. The explanation was that it was easier for nerve force to travel along a beaten track of pain than to arouse some healthy unirritable nerve cell to a state of undue excitement. If a patient complained of pain in any area supplied by the first or second division of the fifth, it might be assumed that the source of trouble resided in the upper jaw, if the painful area was supplied by the third division of the fifth, the great occipital, small occipital, great auricular, or superficial cervical nerves, then the cause would be found in the lower jaw. So far from being eccentric, as some imagined, it was wonderful to observe the regularity of nature as shown in the orderly arrangement of the cells belonging to the dental nerves, from that of the upper central incisor nerve above right down to the lower central incisor nerve below. Dr. Maughan then cited the following among other cases, as instances of remote pain in connection with dental trouble :—

1. A case of blurred vision of 12 years' standing, pupil of right eye dilated and unresponsive to light. Examination of the mouth disclosed a carious right upper molar, this was extracted and three weeks after the sight was perfectly restored.

2. A woman, age 45, slightly presbyopic in both eyes, but more particularly in the right ; she complained of a painful first right upper bicuspid, the tooth was removed with satisfactory results.

3. A case recorded by Mr. Hutchinson. A woman, enfeebled by nursing, complained of failing sight in the left eye, with pain in that eye-ball and the forehead ; the eye was watery, irritable, and photophobic ; she gave no history of tooth trouble, but

Mr. Hutchinson extracted a carious upper molar with the result that the symptoms vanished. In this case the real cell which should have ached transmitted the message to an adjacent sensory cell.

A remarkable case of the reality of remote pain was that recorded by Mr. Raymond. A woman age 38, had severe pain in the head, when she noticed that her hair changed colour from black to red, and then to white, after which it began to fall off. The nerves were subjected to so severe a pathological energy as to lead to inflammatory and structural changes in both nerves and nuclei.

The lecturer in considering remote pain in dental disease was impressed by two facts, one, the uni-lateral situation of the pain, the other, the usual association of a separate area with each separate tooth.

With regard to diagnosis, the question was a wide and far-reaching one. If the dental surgeon had any grounds for suspecting the existence of chlorosis, anæmia, hysteria, gastro-enteric trouble, migraine, rheumatism, &c., he would of course be failing in his duty if he did not at once urge the patient to consult his medical man. On the other hand, the medical man would neither show his judgment nor his honesty if he continued administering drugs if the general disturbance were due to dental trouble.

With reference to treatment, the only medicine that he found of any real value in the treatment of remote pain was antifebrine, but care was necessary in its administration as it sometimes set up cyanosis and urgent dyspnœa ; it best suited pale and spare patients not past middle age. The dose should be two to five grains given every two hours until the pain was relieved. If there were signs of a fatty heart, a mixture containing ammonia, gentian, and spirits of chloroform, with small doses of the antifebrine, would best meet the case. Locally he recommended veratria ointment, and massage ; dentally he would not presume to give advice. If any remote pain remained after full dental relief had been given, galvanism would probably complete the cure.

DISCUSSION.

Mr. C. S. TOMES mentioned a case in his experience, which had some bearing upon two or three things which Dr. Maughan had brought forward. A lady complained of severe pain felt down her arm, but she could not more strictly localise it. She had no dead teeth at all at that time, but had one or two live nerves which were rather open to suspicion ; these were killed and the pain was relieved.

In two or three years she came again, and this time the pain seemed to be due to a moderate amount of inflammation in one of the teeth which was thought to be dead. Here in the same individual they had the same peculiarity as to the distribution of the pain—it being very noticeable down the arm, and appearing twice over thereby seeming to travel over the old road pretty easily. Another point was, that the remote pain occurred with the nerves alive, and afterwards when the nerves were dead.

Mr. CORNELIUS C. ROBBINS referred to a case which occurred in his own practice three years ago. A lady, aged about twenty-six, came to him with a history of very severe intermittent neuralgia ; she had previously consulted another dentist who found the wisdom tooth very much inflamed and advised its removal, the patient was given gas, and she, as well as the doctor present, supposed the whole tooth to have been removed. Seeing that she had the same severe neuralgia, and in just as severe a form, it was supposed that it was constitutional. Another year went by and she was advised to go to Mr. Robbins, who found the second molar had no antagonist and stood very high, and behind that there was a very puffy gum ; she had had pain in the right arm and severe eczema. He probed behind the second molar, suspecting a buried wisdom, and found that a greater part of the wisdom tooth was still there, this he removed with the aid of an elevator ; he found a large abscess and a double curve at the end of the root. The trouble entirely subsided after about six weeks, and the eczema also cleared away.

Mr. W. A. HUNT, of Yeovil, referred to previous papers on the same subject by Mr. Power and Dr. Job Collins, and cited a case in the late Mr. Sercomb's practice, the patient, a female, was suffering a good deal of neuralgic pain in the neighbourhood of the uterus, and she also had a tooth which bothered her very much, the instant the tooth was removed she had most excruciating pain in the region referred to, which lasted only a few minutes and then never returned. If he might digress for a moment he would like to say, with reference to what had fallen from the president, in connection with the late Mr. Naysmith, that Sir William Parkinson told him (Mr. Hunt) himself that he was largely indebted to the nimble fingers of Mr. Naysmith for his success.

Mr. ALBERT agreed with the views expressed by Dr. Collins, whose paper he believed dealt with oculo-dental reflexes only, and quoted cases in support of his opinion.

Dr. Maughan having replied, the president announced that the next meeting would be held on the 6th March, when a paper would be read by Mr. G. W. Watson of Edinburgh, on Pathological Conditions of the Dental Pulp, illustrated with limelight views.

The usual votes of thanks concluded the meeting.

REVIEW.

Notes on Dental Practice, by Henry Quinby, L.D.S.I., second edition. Messrs. J. & A. Churchill, London.

This is a book of 211 pages, well printed, fairly illustrated; divided into eight chapters, respectively on the Temporary Teeth; the Permanent Teeth; Extraction as a Means of Preventing Decay; Irregularities; Treatment of Adult Teeth; Amalgam; Pivoting; Gutta-percha for Impressions; and an Appendix by a medical practitioner on General Anæsthesia. The whole is written exceedingly well, in a style which compares for clearness and elegance with the best efforts in dental literature, which, when one calls to mind the writing of Sir John Tomes, is saying a good deal. *Tot homines, tot sententiæ*, but we soon learn to value the opinions of some men and disregard those of others. As there are many ways of conducting certain dental operations, and many operations very often to choose from, before undertaking a given task, we often desire to take the opinion of some straight-thinking, practical man, who has navigated similar channels before. The advice of an old hand if he answers to this description is very valuable, and should be welcome. We hail Mr. Quinby's book with much pleasure, recognizing in it the words of an experienced dental surgeon, who is accustomed not to be led away into extravagances, by prejudice, or blind exclusiveness, but who is competent and reliable, only speaking when he has really something to say, though this something may be not anything brilliantly original, but only intended for pointing out the best course among several existing ways. We, therefore, have small sympathy with the critic, who, when reviewing the first edition of Mr. Quinby's book in an American journal, scornfully remarked that he did not see why the book should have been written. Such a confession only detracts from our estimation of the critic in question, and not of Mr. Quinby's work. It would be impossible for anyone to write a book on debatable subjects in which nothing could be found to be objected to by any reviewer holding opinions of his own. This will be found so in the present case, but that does not prevent us from appreciating it, and we advise every dentist who reads this to procure a copy and imbibe its spirit. Mr. Quinby's remarks on the care of children's teeth and the inadvisability of extracting tight temporary teeth are well worthy of attention. We are inclined to criticize Mr. Quinby's remark about referred pain arising from inflammation of a pulp in a temporary tooth being explained by the connection of the fifth nerve with "the great sympathetic nerve." The fact of pain often being at spots situated at a distance from the source of irritation is interesting enough, and the manner of its propagation is of merely scientific interest, still, as the pain is always referred to some area supplied by a cerebro-spinal nerve, generally to some other branch of the fifth itself, but in other cases to such more distant nerves as the superficial cervical nerve and brachial plexus, as when pain arising from a tooth-pulp in the lower jaw is felt running down the shoulder and arm, and as the connections of the fifth nerve are extremely free with other cranial nerves, we should be inclined to credit these same connections with the causation of the "referred" pain and not the sympathetic at all. But as a matter of fact, we personally have never been struck by the reflexion of pain from irritated pulps in temporary teeth to anything like the extent that we have from irritated pulps in permanent teeth. The little patients suffering from pulpitis in temporary teeth do not fail, as a rule, to point out correctly the offending tooth, but if the pulpitis is in a six-year molar, how frequently will they not point out a temporary tooth instead. In general tone and feeling, we cannot but praise Mr. Quinby's remarks on the treatment of temporary teeth, but we think that the operation of rhizodontrophy, as applied to a dead temporary molar, and coupled with the insertion of some solid and slightly soluble antiseptic into the pulp canal, and an amalgam filling into the cavity of decay is generally superior to the mere opening of the pulp chamber freely, as Mr. Quinby suggests, for the reason that the blocking of food into the canals during the act of mastication is not possible, while in Mr. Quinby's method it is invited, and socket inflammation is thereby very likely to be set up. We cannot quite agree that no absorption of the roots of a dead temporary tooth occurs. The process of absorption in this case is certainly frequently modified, but we think a great deal frequently takes place. We are surprised that Mr. Quinby, in this edition, has not advanced from his position with regard to the essential cause of putrefaction being micro-organisms. He indulges in a fling at this now thoroughly accredited theory on the ground that the mere opening of a pulp-cavity in cases of pain from a putrescent pulp usually gives instantaneous relief. This does not shake our own faith in the belief that all putrefactions and most fermentations are caused by micro-organisms because it is not the mere germs nor the mere putrescence which causes the pain, but the inflammation and the pressure of confined gas, and the act of opening the pulp cavity presumably relieves tension by giving vent to gas and often to discharge. We strongly believe the putrescence to be caused by the germs ; the inflammation by the putrescence, and the pain by the inflammation, aggravated by the pressure of contained gas and discharge. With regard to the filling of roots, we object to Mr. Quinby's plan of filling them with cotton soaked in an antiseptic, which remains fluid. In our opinion, roots should be divided into two great classes for filling purposes, viz :—1st, the reasonably safe and easy roots, and 2nd, the doubtful and difficult roots. By reasonably safe, we mean those with a canal wide enough and straight enough for the apex to be reached by instruments, and which can be kept dry ; by doubtful, we mean those with a canal which can only be partially traversed by instruments, and in places which cannot be kept dry, and again those which are affected by an obstinate residual pericementitis. All roots of class No. 1 we hold should be filled solidly with gutta percha or cement, and all roots of class No. 2 we advise to be filled with an antiseptic *paste* on cotton wool so as to be easily removable, and to exert an antisepticizing influence on the inaccessible parts of the canal. A fluid antiseptic or cotton for filling roots we object to, on the ground of its fugitive nature. Again we do not admit greater failure after filling roots during the period of growth than later, provided care be taken not to force the material through the apical foramina which are larger in young people than adults. Personally we have extra confidence in roots filled for young people because of the largeness of the canals, and the ease with which they can be filled right up to the apex. Our author runs counter to our own views as to the causation of soreness of dead teeth after filling. He attributes it to increased work thrown upon the periodontal membrane, owing to its having to nourish the whole tooth in the absence of the pulp. We cannot admit that the membrane nourishes anything but the cementum, and think the soreness spoken of depends on either arsenic-irritation of the membrane, or some slight putrefaction going on at or near the apex of the root. The remarks upon the regulation cases are sound and useful as far as they go, excepting those on the momentous question of the extraction of certain of the back teeth. We dissent strongly from the views given in the following passage, where in speaking of the period of puberty, our author says " and if family history and local appearances indicate that the teeth will suffer seriously from the excessive acidity which is natural to the oral secretions at this period of life, there should be no hesitation in advising the immediate removal of the 6-year molars if the articulation is normal; or the 2nd or 1st bicuspids, if abnormal articulation seems to indicate that the removal of these will more effectually relieve crowding and pressure." In the first place we do not believe that any excessive acidity is natural to the oral secretions at the period of puberty. In the second place, we hold that the 6-year molars are the most important teeth in the head *not* to extract at all, and most especially when the articulation is normal, for no teeth have such an influence in preserving a good articulation as the six-year molars. We have seen cases of good articulation thoroughly upset by the extraction of the six-year molars, and the teeth caused after a time to occupy positions reminding one strongly of the present condition of Stonehenge. No such melancholy result accrues from extracting bicuspids where space is needed. On the other hand if, to begin with, the articulation be defective, it may not be rendered much worse by the extraction of the six-year molars, or may in some cases be actually improved. We were glad to note at the recent annual meeting of the British Dental Association in Manchester, the tone of the discussion upon the extraction of the six-year molars was decidedly in the main against the practice, and we have no doubt that as time advances it will get more and more into discredit. And here we feel bound to record our opinion that this astonishing change in dental creed is due mainly to the work of G. A. Bonwill, and J. Davenport, Mr. Quinby's dictum "teeth which are isolated do not suffer from approximal decay" is too sweeping, though true in the vast majority of cases. In exceedingly bad mouths we have frequently seen approximal decay in teeth which have always been separated by the thickness of a shilling, and these not including any cases of rapid breaking up of the constitution, but in young moderately robust people. It seems to us on examining some of the illustrations of regulation cases that Mr. Quinby has been used to riding his hobby rather hard, *i.e.*, of extracting six-year molars; *vide* illustration on page 97. In this case the problem was to pull inwards the six upper front teeth after first making space by extractions behind them. Here our author has positively extracted the six-year molars and then gone to all the trouble to pull back all the upper bicuspids by means of a plate, then to make a plate to keep them there, and so arrived at exactly the same position as if he had merely extracted the first bicuspids, and has moreover sacrificed the best masticating organs in the mouth. The practical advice to use gutta percha and plastics in young teeth in preference to gold as a general rule is sound, though we cannot admit our author's pathology, when in trying to account for decay going on in very sensitive teeth round metal fillings, he says, "I am inclined to think it is also partly due to a degree of inflammation of the dentinal fibrils, which is a preliminary stage of decay, and which the quick-conducting nature of a metal filling, in absolute contact with them, excites and maintains, possibly until a vitiated exudation from them becomes a destructive agent, when the dentine breaks down and is destroyed under the filling, as we know that the alveolus and the cementum and dentine itself, are sometimes destroyed by the unhealthy exudation in alveolar abscess." In answer to this we must say that undoubtedly filling hyper-sensitive teeth, such as we meet with in young people, with gold, except in small crown cavities perhaps, is bad practice and often-times results in failure. Where this failure consists in the reappearance of decay it can be readily explained by the defective manipulation which Mr. Quinby himself points out must often attend a difficult operation performed under adverse circumstances. But, as a matter of fact, the failure which is most likely to follow after reasonably good manipulation is not re-appearance of decay, but death of the pulp, which we all agree is due to the transmission of thermal changes conducted to the pulp by the metallic fillings. And as regards a vitiated exudation from the dentinal fibrils causing destruction of the dentine, there is no evidence. Again, that which Mr. Quinby advances as so incontrovertibly established is in reality not the case, for alveolus, cementum, dentine and other hard tissues are never destroyed by the pus of an alveolar abscess, but by the living cells called osteoclasts which are always to be found in the inflamed soft tissues in these cases. We fully sympathize with the deprecation of unnecessary wedging preparatory to filling, but we cannot go quite so far as our author, who has not a good word to say for it under any circumstances. Now, in our own practice, we do not use much wedging, and look upon much of the wedging indulged in by some practitioners as unnecessary and undesirable, but in the case of front teeth, which are tightly together and where the cavities are small and nearer the labial surface than the lingual, we think, to wedge slightly is the best plan, but not usually to a greater extent than three thicknesses of tape will give. The only alternative would be to cut away the labial enamel in a way which would be unsightly and not at all in keeping with the aphorism "*Artis est celare artem.*" Concerning pivoting Mr. Quinby is good as far as he goes, but he does not enter into the subject of crowning quite in a modern manner, for instance, there is nothing said about the use of collars for crowns, so that of course lower incisors would be out of the pale of crowning by his methods. With regard to the Appendix on Anæsthesia by Dr. Briggs, we cannot but deprecate the encouragement to use chloroform for dental purposes in small quantities as a minor anæsthetic, especially in a book intended for the perusal of dentists rather than of general practitioners or professed anæsthetists. The weight of English opinion is decidedly against the use of chloroform at all for general anæsthesia in dental cases, and especially in small doses, as a shock in incomplete anæsthesia is looked upon as more dangerous than in complete narcosis.

"ANÆSTHETICS: THEIR USES AND ADMINISTRATION." 2nd Edition.—By Dudley Buxton, M.D., B.S., M.R.C P. London: H. K. Lewis. pp. 222 (*Illustrated*).

This, the second edition of Dr. Dudley Buxton's book on "Anæsthetics," is somewhat larger than the last, as fifty pages have been added, and it is also more closely printed. This edition contains likewise a considerable number of illustrations which we think increase its usefulness. All the apparatus necessary for anæsthetising, such as gags, gas, ether, and chloroform inhalers are figured, as well as the methods of doing artificial respiration, the latter, by the way, being the most accurate drawings of that process we know. There are several new articles, such as on rectal etherisation, mixed methods of giving anæsthetics &c. We notice that Dr. Buxton has not changed his opinion with regard to the comparative safety of ether and chloroform, but he puts before his readers the arguments of the Hyderabad Commission in a fair and full manner. and in many cases is in favor of the use of chloroform. We agree with him in advising rather the use of nitrous oxide in the dentist's house to that of chloroform. A description is given of Dr. Hewitt's method of administering gas, and gas with oxygen ; and local anæsthesia by cocaine, chloride of ethyl, are noticed. We think that this edition will prove useful to both dental students and practitioners, as well as to the general surgeon or medical student.

"The Note-Book for Dental Students" (Dental Anatomy and Physiology).—By James F. Rymer, M.R.C.S., L.D.S., D.D.S. Penn. U.S.A. 2nd Edition. Claudius Ash & Sons, London, 1892.

The idea of this little book is excellent, and the fact that a 2nd edition has been called for reveals the demand for it. We regret that the author has not had leisure to go more carefully through his pages, as we notice a good many errors, which in a book devoted to teaching should not be allowed to exist. We have no doubt the 3rd Edition will be free from all such blemishes and will receive our less qualified praise.

"How to give Gas."—By T. E. Constant, M.R.C.S., L.R.C.P. L.D.S.; J. P. Segg, London, 36 p.p. *(Illustrated)*.—A plain straightforward little book, which cannot but prove of value to persons who require in a few words a succinct account of nitrous oxide and how to administer it. The rules which are what have been before the profession for some time now are enriched by the statement of Mr. Constant's own experience. The author's style is pleasant, and he has made his pamphlet most readable.

The North Midland School Cookery Book. London: Raithby, Lawrence & Co., 25, Pilgrim Street, E.C.—There is not a great distance between the teeth and the dinner, and so we suppose there is no great step between cookery and dentistry. The manual before us is most valuable. It is concise, practical and adapted for teaching purposes. It contains a number of recipes alike for plain cookery and more extensive menus. Not its least recommendation is its phenomenally low price, viz. sixpence.

The same firm send us another most valuable little book devoted to sickroom cookery. The writer has most successfully dealt with a difficult subject. We commend both books most highly.

The present day is the zenith for bacteria, or, shall we say, bacteria hunters. We say this with many apologies to Dr. William Hunter, who is a most accomplished bacteriologist, and beg to inform him we spoke quite without special reference to anyone except Mr. Peter Wyatt Squire who has done such yeoman service to microscopists by his invaluable book "*Methods and Formulæ used in the preparation of Animal and Vegetable tissues for Microscopical Examination, including the Staining of Bacteria.** Mr. Squire, himself a skilled microscopist and chemist, has been at the pains of actually making stains according to the directions given by their inventors and published in the various manuals and current literature, and has found that in nine cases out of ten the formulæ are all wrong, or fail to give the results described as occurring with the tissues for which they were devised. This being so, our author has taken up the question and has worked out practicable formulæ and methods which do give the required results. There is an enormous amount of information in the book, which is a genuine storehouse of "tips." The best point about the volume is the fact that it is written by a practical man for practical purposes, and does not waste time by useless verbiage or irrelevant matter.

OBITUARY.

Mr. T. R. M. English.

Many old friends and patients will regret to see recorded the death of Mr. English, the well-known dental surgeon, of Colmore Row, Birmingham, who was for many years one of the leading men in his profession in Birmingham. He was the son of the late Mr. Thomas English, who was also a highly esteemed practitioner in Birmingham. Mr. T. R. M. English's reputation as a dental surgeon was not confined to Birmingham, but extended throughout the Midland counties, and his loss will be severely felt by many old friends as well as by a wide circle of patients who have experienced the benefit of his great skill and kind sympathy.

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* London: J. & A. Churchill.

THE DENTAL RECORD, LONDON: MAR. 1, 1893.

PUBLIC APPRECIATION OF DENTISTRY.

PERHAPS as remarkable a development of public feeling as any of the age, is the enhanced appreciation which good dentistry meets with at the present time. Throughout almost every rank of life the desire to obtain good dentistry has increased markedly of late years, as witness the enormous attendances at the dental hospitals both in the capital and in the provinces. Those whose memory takes them back twenty-five years find it difficult to believe that such a change could ever have occurred in so short a space of time. To-day the dentist is a "felt want" as the advertisements say, and there is a fine discrimination between the dentist and the dentist with a general education in good dentistry, such as is afforded by our hospitals. In this way the dental schools have quietly and unostentatiously engendered in the masses as well as the classes a notion of what constitutes really first-class work, and so have done more towards putting to peaceful rest the bugbear of quackery than could or can by any more truculent method. When it is said that the work done at dental hospitals by bungling students tells against this argument, it is only urging what is a platitude, but a platitude hardly worth more than the passing remark that the work at our dental schools is as a rule so carefully supervised that but few slips occur, the general level of the average filling and extracting being excellent, while, as the artificial work is done really by the experts only, it is placed above criticism. Indeed the ready test of the question is the old one of success, "nothing succeeds like success," and the weekly increase of the numbers of those who attend at the hospitals settles the point as far as the necessitous poor are concerned. As regards those who lie outside the pale of hospital patients, it is notorious that they seek more and require more from their dental adviser than they did fifteen or twenty years ago when the dentist was a very secondary being in the reckoning of the middle and upper classes. Work which a few years ago would have been passed by without comment is nowadays appraised at its just value, and the unskilful author of it loses his patient. We believe that this increased appreciativeness of the public is not always recognised, and so many men make the fatal mistake of imagining that sluttenly work will pass muster. This is both injurious to the individual and to the profession at large, it loses the patient to the individual dentist and it casts a slur upon the *bona fides* of the calling. Of necessity the dentist's patients must give him a free hand, and his becomes the duty of doing his best for his client. The mystery monger makes dark statements about what he proposes to do, and may with the few perhaps gain *kudos* but the genuine exponent of scientific dentistry, having a clear view in his mind of what has to be done for his client, takes him in turn into his confidence and expounds the limits of the possible in his case and does his best. The intelligent patient appreciates this and reciprocates his professional friend's frankness by obeying to the letter the instructions given to him. Under such a system, and it is one which the public are every day growing more familiar with, mutual respect grows, and the patient soon learns to distinguish between the expert and the mere dental salesman, or in brief between the L.D.S. and the L.S.D. On these lines we venture to think the reform of dental ethics will be best achieved.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

PETITION AGAINST DENTAL ADVERTISING.

To the Editor of the DENTAL RECORD.

SIR,—It is to be hoped that Mr. Blandy's petition to the General Medical Council will receive the signatures of all honourable and respectable dental practitioners, so that we may wipe out the disgraceful modes of attracting patients which are in vogue at the present day. It is, I think, a disgrace to the present state of civilization that the practice of dentistry (which should be a gentlemanly, honourable and respectable profession) should be so much on a par with the vending of soaps and numerous other things, which are more or less forced upon the public by means of advertising.

We, as a profession, desire the same social recognition and status as is by common consent bestowed upon our medical confrères. This we cannot expect to obtain, however, as a profession, as long as columns of dental advertisements fill the daily papers, ghastly show-cases meet us at every turn, and pamphlets are thrust upon us proclaiming all the advantages of some dental institute or association.

If Mr. Blandy's petition were carried through, and all this kind of thing stopped, whom would it affect? It would not affect any *respectable* practitioner, it would only touch those who depend upon their advertisements, &c., to bring fish to their net.

Advertising has been tolerated now for many years, and if these gentleman (?) have not been able to establish a practice by now, it shows that they are entirely dependent upon their advertisements to bring them cases from day to day, for their work cannot recommend itself if they require advertising after all these years. The majority of the advertisements are really nothing but a catch to get the unsuspecting patient into the advertiser's hands. The innocent victim goes in perhaps with the idea of getting a guinea set of teeth, and is finally talked and wheedled into a five-guinea one. It seems to me that the only objection that can be raised to Mr. Blandy's proposal is that there is a certain amount of retrospection about it, and that these advertising quack dentists would say that they had always been in the habit of advertising, and depended upon the results for their daily bread. I do not see that this argument would justifiably hold water, because if they have done honest work during past years, they ought by now to be possessed of a clientéle who would appreciate them just as much without their show cases and advertisements.

If their work be so bad that no patient will come a second time, or recommend others, then Sir, are we not justified in sacrificing the few (dentists) on behalf of the welfare of the many (the public).

The 19th century is one of progress, and it is time that our profession was purged of anything which lowers it in the eyes of those who know what quackery is.

I am, Sir, Yours &c.,

101, West End Lane, N.W. GEORGE SEYMOUR.

To the Editor of "THE DENTAL RECORD."

DEAR MR. EDITOR,

In response to your invitation to express my opinion upon the Petition sent to you by Mr. Blandy, I should like to say that I consider the step about to be taken a very unwise one, and will, probably do the Dental cause harm in the eyes of the Council. The Petitioners, it appears to me, fail to understand the function of the General Medical Council. That body has no power to make a resolution such as the petition asks for, it can only administer the Dentists' Act, and I know of no clause in the Act that gives them the power to make such a resolution as the Petitioners ask for.

It has not been done for the Medical profession, and it is hardly likely that an exception will be made, even were it possible, in favour of the Dental profession.

There are Courts of Law before which even the General Medical Council can be hailed, and I believe that no Court would support the action of the Council were it to make such a rule. There is still pending, to be heard before the House of Lords, the appeal of a Dentist whose name was erased from the Register. This case alone has cost the Council very large sums of money, and several such cases would probably render the Council bankrupt.

There is only, in my opinion, one course to be pursued with regard to quackery, and that to leave it severely alone, and also those who so conduct themselves. The public will learn in time which is the right dentist to consult, and meantime we have no right to impose restrictions upon registration that are not mentioned or provided for by the Act. We must be contented to suffer that the future may benefit.

There is, of course, one other course open to the Petitioners, and that is to join the body of the quacks and copy their methods, but in my experience even those who years ago did advertise and have show cases, &c., and gave these method up to conduct their practices on professional lines do not feel inclined to return to their former ways.

Your obedient servant,

MORTON SMALE,

Dean of the School, Dental Hospital of London.

GOSSIP.

The first Meeting of the Odontological Society under the Presidency of Mr. Bowman Macleod was a great success. The number of members and a good sprinkling of "illustrious strangers" made the audience a good one, and worthy of the auspicious occasion of the first time, a 'canny Scot,' a resident in Scotland, has taken the Presidential Chair. Mr. Macleod is to be congratulated upon his success and upon the admirable way in which he executed his duties.

It is whispered that the President is not so devoid of humour as his countrymen are generally said to be, although we have heard it asserted that Scotch men possess humour and wit enough and to spare, but we English are so stupid and so dense that we fail to see it ! *Verb. sap.*

As we mentioned in a previous issue, the Committee of the Dental Hospital of London are raising funds for the acquisition of a new site in Leicester Square, the sanitation and accommodation of the old establishment being inadequate. His R.H. the Duke of Cambridge, the President, cordially supports the idea of the proposed new hospital and H.R.H. the Prince of Wales has sent a donation towards the £40,000 required. The total sum promised has already reached above £7000. Bravo.

Dental Hospital Athletic Club.—The Annual Dinner of the past and present members of the Dental Hospital of London Athletic Club will be held on Tuesday, March 7th, at the Criterion Restaurant, Mr. R. H. Woodhouse in the chair. Many members have found the Saturday on which the dinner has usually been held inconvenient, so the present arrangement of having it at the beginning of the week will, it is hoped, please them better. Communications and requests for tickets (5/6) should be addressed to the Hon. Secretary, Dental Hospital, Leicester Square.

The love of Nature is probably inherent in everyone, although possibly not developed in many, from lack of opportunity or want of early training. The tastes which lead a man, who spends his working day indoors in a cramping posture over other persons' not always too savoury mouths, to wander forth in the early morning and late afternoon into green fields, and pastures new, will probably make him happier and healthier !

Dentists' lives are at the best of times unhealthy, unless the individual dentist makes a rule of passing a given number of hours every week in the open. In many cases men, while recognising the theoretical importance of such a system, fail to carry out the theory into practice for want of some sufficiently strong incentive to open air exercise; tennis, rackets for the boys, golf for the more sober are all very well, and cycling is delightful when the mud is not more than seven inches deep, but even these delights may fail, whereas a little mild flirtation with Dame Nature only makes the aspirant for her favours the more and more eager for further acquaintance, the more he learns of her wondrous ways and marvellous secrets.

Birds, beasts, fishes, the strange things of vegetable life, of leaf, of twig, the insect world, the epoch-making tales of quarry and cutting may well take a man out of himself and his daily routine of work. It is this which conduces more to health than anything.

It is easy enough now-a-days to get out of town, or into the parks for that matter, but is not our purpose to dwell on such facilities, we want to draw attention to an excellent society which tries to inculcate this love of nature and to teach her ways.

The Selborne Society—write to the Secretary, Mr. Western, of 9, Adam Street, Adelphi, for particulars—is the Institution to which we refer. The late Lord Tennyson, the laureate, was the President. The subscription is a very small matter and includes a most excellent monthly natural history magazine called "Nature Notes," which besides giving good articles, furnishes a delightful medley of quaint animal and vegetable life folk lore. It is a charming little paper, and does well for the waiting room.

The Selborne Society, it should be mentioned, has for its objects to inculcate tastes such as those we have noticed above, and which were the distinguishing features of that most interesting person, Gilbert White of Selborne, the naturalist and author of the "Natural History of Selborne."

GUY'S DENTAL SCHOOL.—Mr. Harold Murray has severed his connection with this School, owing to his intention of quitting the profession, previous to going to California with his wife and family. Mr. Murray was one of the original staff of this special department at Guy's Hospital in 1889, he was lecturer on Operative Dental Surgery, and assistant dental surgeon from that time until last January. Mr. Murray was always thoroughly practical in his work, and his lectures were much appreciated by the students, as they knew that they learnt from him many methods of practice that would benefit them hereafter. Whilst regretting his departure from the profession, we heartily trust he will meet with success in the new country, and we are assured that he will carry with him the best wishes for his welfare from his colleagues and the students at Guy's Hospital.

APROPOS of Sir Richard Owen, a rather good story is going the round about his early enthusiasm for anatomy, and the somewhat awkward situations into which it at times led him. When, as a young man he held the post of surgeon to the prison at Lancaster, a negro died in the gaol, and a postmortem as well as an inquest were necessary. After the inquest the young surgeon saw the body put in the coffin and the lid screwed down, to be ready for the funeral next day. Owen had at the time been already attracted to the study of comparative anatomy, and negroes' heads were not plentiful; so he made up his mind that this one should not be lost to the cause of science. In the evening he returned to the prison with a black bag containing a brick ; from his official position he had no difficulty in getting admission to the mortuary, where the coffin lid was unscrewed, and screwed down again. During this process the brick and the negro's head changed places. The ground outside the principal entrance to the gaol has a considerable descent, and the time being winter, with snow and frost, Owen had scarcely passed out when he slipped and fell all his length. The bag went from his hand, and the head tumbled out, and rolled down the paved way. He jumped up, caught the bag, and following the head, clutched it just as it finished its career in a small shop where tobacco was sold. Pushing it into the bag again, he vanished out of the shop with all the speed he was capable of. Next morning, when Owen was going to his usual duties at the prison, he was called in by the woman at the shop where the accident had occurred on the previous evening. She wished him to see her husband, who was very ill. He had had, she said, a fright the night before that caused him to look wild and dazed-like. The man, it turned out, was a retired sea captain, who had been in many adventures among the West India islands, when many deeds were done that did not at that time require to be accounted for. Among these had been the killing of a negro, in which he had a hand, and the transaction had left a touch of trouble on his conscience. After giving these details the old captain told of the horrible event that took place the night before. He was sitting in the shop, all was quiet, and it so chanced that he had been thinking of the negro, when suddenly he saw his very head roll into the shop in front of the counter, and it was followed by the devil, all in black, with a black bag in his hand. The devil snatched up the head, and both disappeared through the earth like a flash of lightning. The description was perhaps not quite complimentary to the young anatomist, but it was satisfactory so far that it showed that his identity had not been recognised.

It appears that "professional status" is not always the guarantee of honorable preferment in high places, as the following anecdote of his Holiness, Pope Leo XIII seems to indicate. It appears that at the end of last year, his Holiness had been severely punished by two decayed teeth, and his physician, Dr. Ceccarelli advised him to have them out. His Holiness, while acquiescing, remarked he would have none of those dentists who are merely trained in theory. He wanted a "thoroughly experienced practical man." Consequently, a "tooth-puller," *i.e.* a barber was called in, who relieved his Holiness of his pains without further ado, says the narrator of the yarn in *Die Zahntechnische Reform*, but we venture to think there must exist in the land of the seven hills some half-way halting place between the house of the man of theories and the mere "tooth-puller." No doubt in an age of microscopes and examination papers there may be some fear of over-elaboration in the teaching of theory at the expense of practice, but on the whole, no "mere tooth-puller" for us.

Among notable men of science who have been in zenith of late, have been Sir Richard Owen, of whom we published a notice in our last issue, and who is, we are glad to see, to be honored in the place which whilom he begged for in vain, the Natural History

Museum, by his nation, who grudged him in life, probably the only request he ever preferred—Professor Pasteur, with whose honors Paris has been ringing—and now Professor Moleschott, a man of ripe science, a rare acumen of profound learning, who, at the age of seventy, receives laurels in the University of Rome, wherein he is professor of the Institutes of Medicine. A native of the Netherlands, Moleschott began his scientific work under the auspices of Gerard John Mulder, and the methods and the knowledge he thus early mastered fitted him for the *rôle* he was destined to play as a reforming physiologist in doctrine and in exposition. His career at Heidelberg is memorable, says a contemporary, in academic and scientific annals for the intrepidity with which he assailed and seriously invalidated the views of Liebig, particularly in the domain of nutrition, and after his virtually constrained withdrawal from Germany to Switzerland, he continued his thoroughgoing independence of investigation and of teaching in the medical school of Zürich. His beautiful memoir on "Licht und Leben" marked him out as a physiologist equally competent in the sphere of speculation and of analysis, and the fame he acquired among the Swiss led to his transference, on the invitation of Cavour, to the then somewhat backward school of Turin. There his early and keenly sympathetic adoption of evolutionist principles brought him much enthusiastic support from the younger generation of students, while he continued to delight and conciliate the older by his lucid exposition of all that was soundest in the new biology. His pupils soon carried his spirit and methods, as well as his doctrines, to other centres of professional education, so that his fame was thoroughly established throughout Italy, when some twelve years ago he was called to the chair of Physiology in Rome. Again he made his mark, in spite of much recalcitrant tradition, and year by year he sent forth to the Italian cities and provinces a thoroughly equipped band of working practitioners and hygienists. The good he thus achieved can be estimated only by those who remember the slovenly training so long the rule in Italian Universities; indeed, the reinvigoration of medicine at his hands has been quite as remarkable as the revival of archæology at those of the Germans in the same Peninsula. Nothing has been more wholesome for Italy than the substitution within the last twenty years of Teutonic for Latin influences, particularly as these latter were represented by the French. Italy's Gallic neighbours were too nearly akin to herself to exert the same fresh, deeply penetrating reforms in research and in teaching as those introduced by the investigators and expositors of the Rhinelands. While France tended to confirm Italy in her worst, most traditional shortcomings, Germany infused a new life and gave a novel direction to her ideas and her work, and the fruits of her influence have been especially made conspicuous by the Dutchman as to birth, but Teuton as to experience and idiosyncrasy, James Moleschott. It was to express her gratitude for services really inestimable that Italy recently came forth in all her academic and scientific strength when her central school was the scene of a commemoration as brilliant and impressive as it was unique.

THE PROPOSED PETITION ANENT ADVERTISING. Mr. C. S. Tomes writing to Mr. Blandy gives his reason for not wishing the petition to appear in the public press. Briefly, the reasons why the committees, *i.e.*, of the British Dental Association and Publishing Committee of the British Dental Association Journal do not think it advisable that such a petition should be drawn and sent are these: (1) That so far the Medical Council has listened with much attention to all recommendations which have gone to it with the full authority of the Association, and it is in writing that they now regard the Association as the mouthpiece of the profession, and therefore as carrying much weight—indeed, with but trifling exceptions, for some time past everything which has been urged with its full authority has sooner or later been put into execution. Now this influence would be greatly weakened if the Council is shown that opinions are divided. As a matter of comparison it is generally thought that the British Medical Association has carried less weight than it otherwise would have because of its branches acting singly instead of all together. (2) Though I personally have had practically nothing to do with it, and so can speak dispassionately, I am very strongly of opinion that our present influence is very much due to the fact that great care has been taken not to press upon the Council anything that they were not likely to think reasonable and practicable. (3) Our present relations with the Council seems so satisfactory, and the influence of our Association so much stronger than at any antecedent time, that it would be a thousand pities to do anything which could imperil their continuance. Now, although there can be but one opinion amongst us that we should like to see advertising in all its forms disappear, yet it behoves us to think twice before we approach the Council as to whether they, no matter how much in sympathy with us, could take the action requested, and if we find that they probably could not, to stay our hand. Were we to now press it upon them, they might take it as arguing an imperfect acquaintance with their work, their difficulties, and their existing circumstances. Moreover, quite as much is being done for us as for the general medical profession, in which only advertisements of a very flagrant type has as yet been dealt with. And as all time spent upon the discussion of dental business is charged against the dental fund, and runs to a formidable sum per hour, it is very inexpedient to put matter before them which must lead to expenditure of time, but is not likely to lead to action. These considerations render it, in the opinion of the committee, inexpedient to greatly push the advertisement question at the present juncture. With regard to the second portion of the petition, this might perhaps tend to defeat itself by giving offence. The Council has taken a decided position upon the question of covering, and it would be judicious to assume that they will thoroughly act upon it. It will be quite time to urge upon them that they should do so when we find that they do not, but it would surely be bad policy to say one word which could possibly be interpreted as casting a doubt upon their thoroughness : and that, it seems to me, the latter half of the petition might be read as doing. Moreover, as a piece of worldly wisdom, it is a bad moment to ask for more when we have been given so large a benefit as the covering resolutions—the Council might think there is no satisfying us. So after giving a very careful consideration to it, and holding an extra meeting for the purpose of threshing it out, the Publishing Committee has asked me to lay these aspects of the question before you.

THE same issue of the British Dental Association Journal which contains the above letter from Mr. Tomes, puts forward the reply from Mr. Blandy and we cull the following from it.

“ Nothing has been done, and so far as I can see, the Business Committee of the British Dental Association feels itself unable to cope with these men under existing conditions, and we provincial dentists, meanwhile, are suffering immensely, and the public are being swindled outrageously. It is clear, then, some other way must be found. The position and rulings of the General Medical Council have been again and again declared to be unassailable and unalterable. Your Committees admit, and we all acknowledge the General Medical Council has grappled with the question of "covering" so far as will, I suppose, make it possible for the British Dental Association to take up this grievance at once. I hope it will—I don't anticipate the General Medical Council will of their own motion. Well then, having gained the ear and attention of the General Medical Council, why should you dread losing it, by asking it to purge us from the greatest blot of all? Surely, on the contrary, the Council would at once say: "These dentists are really in earnest, and wish to make their profession a creditable one. We don't allow quack doctors and advertising pill makers on the Medical Register, and why should we on the Dentists' Register?"—and it would be a pleasure to them to feel they had had a hand in educating us up to so high a standard. We are not going to the General Medical Council as a divided body—except so far as the dirty boys will object to being washed—we shall, I trust, present a whole front. My action has been, and will be, to strengthen your hands. If you say we are not ready yet—I say, then let us begin to get ready. It will take time, as all great reforms do, and the sooner we begin to agitate the question, the sooner shall we be able to present a whole phalanx, and the sooner will it reach the ears of the General Medical Council that we are coming."

Journalistic Memorabilia.

Mr. Frederick Treves describes in *The Lancet*, what is fortunately a somewhat rare affection of the jaws at the present day, *i.e.*, "Phosphorus necrosis of the upper jaw, resulting in chronic abscess of the brain."—There are many circumstances which make it probable that the necrosis in this case was the result of exposure of the patient to phosphorus fumes. In the absence of other causes, a slowly extending necrosis of the upper jaw in a patient with a history such as this may safely be ascribed to the effects of the phosphorus. It is luckily unusual at the present day to meet with necrosis of the maxillæ due to this cause, the effect of Larinser's paper on the subject in 1845, the contributions of Wilks, Bristowe, Simon and others in this country being to clearly demonstrate the cause and point out the remedy. Suppurative meningitis is rarely a cause of death in these cases, but a case is recorded which was under the care of M. Hervieux at the Hospital Necker, in which the patient, a lucifer-match maker, had necrosis of the lower jaw, the upper jaw, and afterwards of the bones of the palate, the bones entering into the orbit and the frontal. He died with brain symptoms. Pus was found between the dura mater and the brain.*

A dipper in a Scotch match factory was admitted into the London Hospital on Oct. 11th, 1892. His age was forty-nine, but he had the appearance of being much older. He was thin and anxious-looking. He had worked at his trade for thirty years without suffering any inconvenience therefrom until about nine months previously to admission. The first symptom complained of was toothache in the right upper jaw, which troubled him continuously for four months. He then had some decayed teeth removed. Shortly after the gum tissue sloughed off the jaw, part of which became exposed. On May 9th some dead bone was scraped away, which gave him some relief. Gradually, however, the necrotic process spread, and a very offensive discharge, previously slight, caused him much distress during the interval between the month of May and the time of his admission into the London Hospital. For six months previously to admission he complained continually of severe headache in the frontal and occipital regions. He could bear no hard covering on his head, so he always wore a soft cloth cap. The headache was almost constant and prevented him from sleeping. His pupils were normal. On Friday, Oct. 14th, Mr. Treves operated. The sequestrum was found to include the whole of the right upper jaw, below the level of the infra-orbital foramen, and was bathed in pus of the foulest description. The cavity, after being washed out, was stuffed with iodoform gauze. The after treatment consisted in irrigating the cavity hourly with a lotion of carbolic acid (1 in 80) and the patient was placed on a liberal diet. From Oct. 11th to the 23rd the temperature was never high; it varied from 97·6° F. as the lowest point to 99·8° as the highest, being usually about 99°. Until Oct. 23rd the patient appeared to be doing well; his headache had almost gone, he slept well and was very cheerful. He was disinclined to get up, but was preparing to return home on Oct. 24th. At 3 a.m on Oct. 23rd, eight days after the operation, on an attempt being made to arouse him to have his mouth washed out as usual it was found that he had become unconscious. The temperature, too, had risen to 104°. On attempting to do anything for him he resisted and became very irritable and difficult to feed; he was also very restless and kept groaning and putting his hand to his head as if in pain; he vomited once some greenish mucus. Heart, lungs and abdomen showed no signs of disease; no motor or sensory paralysis; pupils contracted but were equal and reacted to light.

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* System of Surgery, Holmes and Hulke, p. 477, vol. ii., 1883.

Oct. 24th.—Patient fed by suppositories and with difficulty induced to take about a pint of milk during the night. Temperature between 99° and 100° during the night; pulse 84, full but compressible; respiration easy, equals 32; pupils normal; knee-jerks slightly exaggerated on both sides, with ankle clonus. Some twitching movements had been noticed in the left hand. Very restless; groans continually. Urine drawn off by catheter.

25th.—The patient has been more apathetic for the last twelve hours. He has taken milk by the mouth and is now passing urine and fæces under him; no vomiting; pupils contracted, equal, and respond slightly to action of light; groans continually; cheeks puff in and out with respiration, but no stertor; respiration 28 per minute and diaphragmatic; pulse full, but easily compress, 108; skin warm; sweating freely on head and face; right palpebral fissure wider than left, the eyelids being partially closed; fundi normal, except for some enlargement of veins. The patient's condition was now desperate. On the afternoon of this date, after consultation with Dr. Stephen Mackenzie, Mr. Treves decided to trephine in the hope of liberating any collection of pus that might have formed in the brain. By means of a two-inch trephine the skull was opened over the right motor area and a small trocar and cannula passed in several directions into the right hemisphere without result. The patient succumbed an hour after the operation.

The post-mortem examination was made on Oct. 27th by Dr. Percy Kidd. The pleuræ, larynx, trachea and bronchi were normal. In the upper lobe of the left lung at the lower margin was a small abscess the size of a Spanish nut with a slightly developed capsule. There were a few ill-defined reddish nodules in the posterior part of the lower lobe (broncho-pneumonic). No morbid change of any importance was discovered in any other of the viscera. Brain: Diffuse, purulent meningitis of base, less extensive over vertex. At the apex of the right temporo-sphenoidal lobe was a small encapsuled abscess, close under the cortex. It was evidently of long standing. Both lateral ventricles were filled with pus. In the right ventricle the ependyma was distinctly thickened and of a greenish-red colour. The suppuration was evidently not recent. The brain tissue around the right ventricle was softened and numerous punctiform ecchymoses were seen. In the left lateral ventricle gelatinous greenish pus was found, but there was no thickening of the ependyma and the brain around was normal. The rest of the brain was healthy. The right cavernous sinus was occupied by a softening and stinking clot. On removal of the brain the foramen rotundum was found to admit a cedar pencil and to lead into a large space from which the greater part of the superior maxilla had been removed. The edges of the enlarged foramen rotundum were necrosed and greyish in colour. The parts of the superior maxilla remaining and also the body of the sphenoid were greyish and necrosed.

Remarks by Mr. Treves.—The removal of the large sequestrum was effected without the least difficulty. A few taps from the chisel set it free. The patient was allowed to get up a few days after the operation, but he was rather inclined to remain in bed, stating that he had arrears of sleep to make up. There was no sickness after the operation, and he vomited only once during the whole progress of the case. He was an active-minded and intelligent man. The abscess of the brain was evidently of long standing and was due to direct extension from the seat of disease. A sudden lighting up of the inflammatory trouble brought about the fatal termination. The long period during which the abscess on the right side of the cerebrum remained dormant is illustrated by many other cases of cerebral abscess. The patient's condition at the time of the operation was desperate, and considering the liberal manner in which the tocar was used the non-evacuation of the abscess was remarkable. The pus in the abscess on the right side was very thick.

PRACTICAL HINTS.—Mr. S. EDWARD PEDLEY, one of the anæsthetists to the National Dental Hospital, writes anent the spluttering of "Nitrous Oxide Gas as it leaves the Bottle."

He says, it is in the experience of most if not all administrators of nitrous oxide gas to find the gas obstructed during its exit from the bottle, and on the tap being further unscrewed for the gas to rush out sometimes to an uncontrollable extent, blowing off or bursting the india-rubber connection, causing great annoyance to the administrator and serious alarm to the patient. This obstruction is said to occur when the bottles are in the horizontal position and to prevent it taking place, the late Dr. Sheppard, anæsthetist to Guy's Hospital Dental School, invented an ingenious contrivance. As, however, the cause of this obstruction is not generally known and so easily prevented, I venture to state the reason and remedy for it. It is due entirely to a small quantity of water accumulating from several fillings of the bottles, the result either of the condensation or moisture from improperly dried gas or introduced in the process of pumping the gas into the bottles. When this water freezes on account of the absorption of heat which takes place during the changing of the liquid gas into the gaseous condition, it forms an effectual barrier to the outward flow of the gas which may suddenly yield as the tap of the bottle is further unscrewed. The remedy is a simple one and is in the hands of the manufacturers of the gas of of those administrators who have their own bottles refilled—namely taking the precaution to have the taps of empty bottles removed and the water shaken out. I have adopted this plan for two years, during which time I have experienced no inconvenience in administering nitrous oxide gas from bottles placed in the horizontal position.

CORROSIVE SUBLIMATE AS A GERMICIDE.—Dr. C. T. McLintock* has made some extensive researches upon corrosive sublimate as a germicide. His experiments show that this substance is not a strong germicide, as germs withstand its action for some time. He maintains, however, that though corrosive sublimate is not a good germicide that is no proof that it may not be valuable as a disinfectant. As is well known, of all substances it has the greatest antiseptic power, and, according to Dr. McLintock's theory, a germ treated with sublimate, unless perchance it gets into the blood or is exposed to very exceptional conditions, is powerless to grow—that is to say, it is probable that a spore of subtilis or anthrax treated with sublimate (1 in 1000) and then thrown on the soil or into water will not germinate owing to the fact that the capsule of sublimate surrounding it is not removed. The former experiments alleged to prove its germicidal power were faulty, inasmuch as in some there was carried over with the disinfected material enough of the sublimate to act as an antiseptic; in others, as those of Abbott, it was not recognised that the sublimate combined with the investment of the germ and prevented any growth, especially in solid media. Again, different cultures have, as pointed out by Esmarch and Gruber, very varying powers of resistance, an all-important factor in determining the germicidal value of any agent. Corrosive sublimate forms with cellulose, as cloth, filter paper, &c., with silk, with albuminous bodies, with some part of bacteria, probably the envelope, a chemical compound that cannot be removed by any amount of washing with water. Thus sublimate when acting on a germ forms a capsule around it that protects the germ for a time from the further action of the sublimate, and in turn forms an impenetrable barrier to the growth of the organism unless removed. This barrier may be removed with salines, and is more rapidly removed in proportion to the renewal of the saline, conditions that are fulfilled in the circulating blood The action of sublimate on bacteria is probably closely analogous to that of alcohol. All experience leads to the belief that absolute alcohol is immediately fatal to protoplasm, and the only way that we can explain the fact that spores may survive in absolute alcohol for weeks is on the assumption that the alcohol somehow changes the envelope of the spore, rendering it impermeable. Dr. McLintock thinks with De Barry that the presence of a gelatinous envelope in many, if not all, bacteria at certain stages of their life history has not received the attention it deserves. This envelope probably serves the organism in protecting it against temperature, dehydration and chemical agents. Whether the germs contained in solutions treated with sublimate, and disposed of as such material usually is, do or do not grow remains to be proved.

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* Medical News, Oct. 8th, 1892.

THE PARASITIC ORIGIN OF CANCER.—A very interesting series of communications upon this subject have recently been appearing in various journals. One by Dr. Galloway read before the Hunterian Society, and reported in *the Lancet*, deserves the most careful perusal. The general term "Protozoa" was preferred as certain of the parasitic forms were of doubtful classification. The well-known psorospermic disease of young rabbits was taken as the basis, and the main symptoms of this affection described, as observed in the young and in the adult animal, including, as easily recognized signs, emaciation, severe illness and acute enteritis. The main stages in the development of the parasite (coccidium oviforme, Leuckart) were then described. The lesions caused by it in the liver and in the intestine were referred to in detail, and the importance of the condition as giving an example of the infection of epithelial cells by a parasite which undergoes one stage of its development within the epithelial cell, was emphasised. The method by which the parasite gains access to the cell was suggested to be by movements on the part of the invading organism, either alone or possibly aided by movements on the part of the epithelial cell itself. The stage of development undergone external to the body was said to be of great importance in reference to the infectious rather than contagious character of the disease. The close resemblance of the growths observed in the organs of the host to adenomatous tumour was shown. Coccidial infection in the human subject was alluded to. The question of protozoa occurring as parasites in malignant tumours in the human subject was then considered, and many forms of epithelial cell inclusions which had been described as parasites were noted, and arranged roughly as follows:—1. The invagination of one epithelial cell within another. 2. The occurence of invading leucocytes within epithelial cells. 3. The endogenous formation of cells, possibly by direct division of the nucleus without division of the cell body, or more probably by asymmetrical karyomitosis of the cell nucleus, giving rise to several masses of chromatin bodies within one cell wall. 4. The various forms of degeneration of the cell body or its nucleus, such as the colloid, &c. Many of the so-called parasites were caused by one or other of these processes. Certain other cell inclusions had been described by some observers abroad and by Dr. Ruffer and Mr. Walker in this country. Dr. Galloway was able to confirm in almost every particular the appearances described by these authors. The occurrence of the inclusions within the cell body, occasionally also within the nucleus itself, the structure of the inclusions, consisting in the adult condition of a very distinct capsule, enclosing one or more very obvious, brightly staining bodies; the radial striations passing from the periphery towards the centre; the variations in size indicating various stages of growth; the completely distinct staining reactions shown by the inclusions when compared with the nuclear chromatin of the epithelial cells and its degeneration products, were mentioned as clearly differentiating these bodies from any form of cell degeneration and guiding to the conclusion, that, in our present state of knowledge, these inclusions must be regarded as parasitic protozoa, probably having very distinct effect on the epithelial cell growth and possibly even on the causation of the malignant tumours in which they have been found. The importance of careful histological methods was strongly emphasised and the cause of many of the doubtful accounts of "cancer parasites" was ascribed to imperfect methods of preparation. The demonstration was illustrated by drawings, by the use of the lantern and by microscopic preparations.

Dr. RUFFER speaking on the same subject expressed his entire agreement with Dr. Galloway's conclusions, and added some account of his investigations into the development of the parasites. Contrary to his first belief he could now with more perfect methods see the intranuclear form of the parasites in every specimen of cancer he examined. It first appeared as a little round body staining by hæmatoxylin, which approached the periphery of the nucleus and then escaped and lay free in the protoplasm of the cell. There might be one or many of these bodies and in some cases the nucleus actually burst. He knew of nothing in human pathology which would correspond to this unless it were a parasite. He had been able to see the living parasite in fresh juice scraped from a rapidly growing cancer of the breast placed in normal physiological fluid on the stage. It looked just like an amœba enclosed in a capsule, putting out pseudopodia to the periphery and withdrawing them. As to the part these bodies played in cancer he could only say that there was no reason against the supposition that some of them might be the actual cause of cancer. A nucleus containing the parasite was hardly ever to be seen dividing, but where cells were dividing the parasite was found in the neighbourhood. His suggestion was that the bodies produced karyokinesis in the cells around and thus caused the cancer growth. The forms of cancer which come under the notice of dentists more particularly, are the epitheliomata, affecting the jaws or tongue—which appear possibly to be of psorospermatic origin—and the sarcomata affecting the same region.

DR. C. B. ATKINSON records in the *International Dental Journal*, a recent case with interesting features February 17th, 1892, a female, eighteen years of age, of lymphatic temperaperament, several carious teeth, as noted later, chronic incontinence of urine as a sequel of scarlet fever, and a general hyperæsthetic condition of the mucous membrane, presented herself with considerable swelling over the left side of the face, especially prominent opposite the site of the left superior first molar, extending backward and downward to a point near the lower border of the inferior maxilla, posterior to the site of the left inferior second molar, and having a poultice of soap and sugar about the size of a silver dollar placed about the latter point. The skin was greatly inflamed under and about this poultice, and extremely thin, and threatening to slough through momentarily. On removing the poultice (which was at once ordered off permanently) a fistulous opening was disclosed, which discharged serous fluid. A probe demonstrated soft tissue in all directions, bleeding freely on slight pressure of the probe.

No abnormal growth of any kind was present. This swelling at the angle of the jaw on direct pressure produced a sensation of a hard growth at the angle, but traction on the skin anteriorly and posteriorly permitted a clear definition of the normal maxilla, and plainly disclosed the hardness to be confined to the soft tissue and entirely due to the inflammation about the fistula (*caused by the poultice*).

Examination of the interior of the mouth showed the absence of the superior centrals, carious left superior cuspid, first and second bicuspid, and first molar crown absent with its three roots separated, anterior buccal root very loose, great gingival hypertrophy, bleeding on slightest pressure, with extensive swelling on the buccal aspect of the gum back to the condyle. The left superior second molar carious, and left superior third molar also carious in the crown, erupting outwardly and posteriorly, and impinging on the ramus at each closure of the jaw to such an extent as to cause considerable pain.

The mucous membrane covering the ramus at this point was quite inflamed and considerably swelled.

The left inferior third molar was carious in the crown (or, as Dr. Kirk suggests, contained a "morsal" cavity). The left inferior first molar was absent, having been extracted (?) March, 1891. The left inferior second molar absent.

A small abscess pointed opposite the site of the posterior root of the left inferior second molar, on the buccal aspect of the inferior maxilla, with slight swelling.

Pressure about this point caused a slight exudation of this pus, and the finger being carried over the apparently healthy gum between the left inferior bicuspid and third molar demonstrated a sharp, pricking sensation, irregularly marked along the buccal border of the space from which the left inferior first and second molars had been removed.

Diagnosis.—Fractured buccal wall of the alveolus of the left inferior first molar, which had become carious.

Inferior external swelling sympathetic (poultice, wanton interference).

Superior external swelling due to the impinging of the left superior third molar (erupting) against the ramus. These swellings aggravated, and, in a measure, joined to produce, a pendulous enlargement of the left side of the face by the œdema from inflammation about the roots of the left superior first molar.

Treatment.—The poultice was discontinued at once, as stated.

The external swelling was coated with contractile collodion.

The loose anterior root of the left superior first molar was removed.

A U-bolt was fitted to the posterior buccal and palatal roots, and a porcelain crown set thereon, the hypertrophied gum having been thoroughly excised and burned with pure carbolic acid. The bite was slightly opened by filling with cement to form an abnormal crown on the left superior second molar.

A filling of cement was placed in the left superior third molar, so as to occlude upon an inclined plane with the posterior edge of the left inferior second molar, diverting the erupting superior third molar forwardly and inwardly, and prolonging the buccal face with a rounded, smooth surface, against which the ramus could play without inconvenience.

The gum between the left inferior second bicuspid and third molar was laid open, and the carious alveolus removed with a bone bur in the engine.

This line of treatment proceeded from February, 17th, 1892, until March 16th, 1892, when the case had assumed a normal appearance and feeling: it is now being fitted with bridges and permanent fillings.

From the following history of this case, previous to its presentation to the writer, some grave conclusions may be drawn, and it was the special nature of its history which urged its presentation before you. In the writer's experience it is by no means an isolated example of hasty diagnosis with unfortunate results. In this instance, a comely young woman sustains a cicatrix needlessly ; although by constant anointing with lanolin and persistent manipulation the scar has already been drawn down under the border of the inferior maxilla (a distance of at least three-fourths of an inch from its original site), and although it will be small and not readily noticed, still it will be a life-long scar. In addition to this is the year (nearly) of needless physical and mental suffering, with the systemic exhaustion the continual urge to suppuration induced.

History.—The left inferior first molar was extracted (?) in the latter part of March, 1891, under nitrous oxide. In about two weeks the left side of the face began to swell. The family physician was called in, who said he feared an abscess, although he hoped it would not be of the bone. On further examination he said the left inferior second molar had abscessed, and advised extraction. The patient consulted a dentist, but her naturally flabby tissue had become so tense from the serous infiltration that the dentist could not gain access to the tooth. Another call in a week resulted likewise.

July 1 (three months after the first extraction), six teeth were removed, including the abscessed left inferior second molar.

July 4, the physician was again called, and diagnosticated the (sympathetic) external swelling as an abscess and ordered a flaxseed *poultice !*

This poultice was continued until August 1 (a month), when the swelling was lanced, and the contents proved to be chiefly blood. The poultice was continued for three weeks, and again the lance was plunged into the patient's cheek.

The flaxseed poultice was then replaced with one of soap and sugar. The hard swelling and the before-mentioned neighbourhood enlargements continued. The patient visited the country in the last week of August, where she consulted a surgeon in a hospital, who diagnosticated a bone tumour, the traumatic removal of which would probably result fatally, and advised its removal by injection. This operation was declined.

From September, 1891, until February, 1892, the soap and sugar continued its fell work of softening and thinning the skin beneath the plaster, until the patient presented herself to the writer, February 17, 1892, with the results stated.

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Original Communications.

INAUGURAL ADDRESS.*

By W. H. WOODRUFF, L.D.S.,
Dental Surgeon to the Dental Hospital of London.

GENTLEMEN,

When eighteen years ago I filled the office of Honorary Secretary to your Society, I little dreamed that I should be placed in the proud position of President, and although I feel very deeply my incompetence for this office, I fully appreciate and thank you all for the honour you have conferred upon me, and can only assure you that as far as it lies in my power, no effort shall be spared to advance the interests of this useful Society, and to render this a successful and I hope a profitable year to all. I have ever had the kindest regard towards the Society, which it has been my good fortune to have known almost from its infancy. I have watched with sincere pleasure its gradual and steady growth, and as I look round me to-night and compare the number of Students now present and observe many details in its general working, I see a marked and almost incredible difference from what took place in my student days. It is this reflection which makes me almost long that I now was only just on the threshold of my professional career, and could again begin my hospital training with all those advantages which surround you at the present day. Still there is much to be done, and I doubt not that many of you here to-night will be able in years to come to take a like retrospect and be animated by kindred feelings to those which spring up in me at this moment. I well remember how as a student I looked forward into futurity, wondering where my lot in life would be cast, and seeing those of older years in successful practice, daring scarcely daring to hope that some time a like share of success might fall to my lot. Indeed I fancy that if I were indeed with power of thought-reading, and could penetrate the inmost recesses of each of your brains, this same feeling would be found by me present in many of you, for doubtless all at one time or another have speculated on what future had in store for us, and all alike have longed for success.

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* Delivered before the Students' Society, of the Dental Hospital of London.

But here let me ask the question, What do we mean by success? and as professional men and dentists, What is the aim before us—the goal for which we are all striving?

I trust there may be a unanimous response to this, and that you may all repudiate as unworthy the mere struggle after pecuniary gain as the sole object of your aspirations, except in so far as that accompanies, shall I say of necessity, the faithful performance of duty and the skilful appliance of professional knowledge and work. Be assured that every labourer is worthy of his hire and that to each one of you who acquits himself right well, even that form of success will not be denied. I would, however, impress upon you the need of acquiring whilst here the largest measure of knowledge in order that you may enter the arena of life fully equipped for the fray, and may each one may avail himself of the many advantages which the present time presents. Do not think that the mere filling and extracting of teeth, or the "cramming" of other subjects just sufficiently for the passing of the necessary examinations is the whole sum and substance of your training, or that it is likely to lead to future success, but take care that by diligent reading and the acquiring general information on many subjects, your minds become enlarged, while by careful observation not only you yourselves may be enriched, but the profession at large may be proud to own you as one of its members, and be grateful for your efforts, while your patients will also in like measure be benefitted. It cannot, of course, be given to all to have a like measure of success, nor can all expect to work along the same lines, but if you each add some fresh idea, some knowledge to the general fund, some labour for the good of others coming after, your life will not and cannot be a failure.

There is perhaps no one thing more conducive to a successful career than the cultivation of the habit of *observation* and the *careful attention to details*. It would fill far too large a catalogue to attempt any enumeration of the many details of our every day work, for in all our occupations and in every operation we undertake, these details surround us and call for careful consideration, and yet how many seem to be blind to trifles which perhaps if each stood by itself would not be of much importance, but when linked together make a large total, and the non-attention or attention to each integral part will determine all the difference between failure and success.

Does the man who goes to attend his patient with hands, nails and hair ill kept, with clothes unbrushed and having possibly dirty and bloodstained instruments on his table or in his cabinet, or who has just freshly been indulging in the fragrant weed, and with breath and clothing redolent of its enticing but not always agreeable fumes, think that his patient is oblivious of all this ? Surely not ! And yet are there not some such who pay no attention to these details? Gentlemen, if you wish to be successful in after life, these and a thousand other trifles must be well noted and attended to ; see that you cultivate gentleness in manner and care in handling everyone who may sit in your chair, whether rich or poor, remembering that we have not blocks of wood or stone to deal with, but human beings and fellow sufferers, all of whom possess nerves just as we have, and further, as now your habits are being formed and developed, I would impress upon you the importance of beginning at once, and, as far as circumstances permit, treat all those at present entrusted to your care as you would do were they in your private consulting room.

There are very many subjects that one could single out as calling for careful attention in its details, but perhaps you will bear with me patiently for a few minutes if I enter somewhat fully into what you may regard as an elementary subject, and yet in my judgment a most important one, and I am sorry to add too often overlooked and neglected—namely, the process of scaling and cleaning the teeth.

What is the use of a good sound set of teeth to your patient if they be allowed to loosen and eventually fall out, and how is this in a great many cases brought about ? Surely by those large accumulations of tartar that we see in so many mouths, but remember that these collections do not all form at once, but that it is gradual and in some cases insidious process. Remember too, that every patient who comes to you cannot know the importance of nipping this in the bud, and preventing by care these accumulations altogether, or where, as in those of a gouty or rheumatic diathesis, or from other constitutional tendency, this seems almost impossible even with the greatest care, the importance of checking it as far as may be, and getting what does form regularly and carefully taken away. It is your duty to bring home to the mind of each patient the necessity for this, in order to render and keep the mouth and gums in a healthy and comfortable condition ; and this education of our patients, if I may so call it, can scarcely be begun at too early an age, for although we do not often see large deposits till about the age of 40, it is the initial mischief which it is so important to check, and I believe that if we could induce our patients to second our efforts and from early life give careful and every-day attention to the proper brushing and cleansing of the teeth, this very care would become so familiar, and indeed would be felt by each one so necessary to his or her own comfort, that instead of being an irksome duty it would become second nature, with the result that we should see many more good sets of teeth in after life than we do see, and, depend upon it, have earned the gratitude of those who follow out our instructions. Of course, we cannot hope for all to benefit alike, nor for all to take the necessary daily trouble, but some and many will if the importance of it is made clear, and although now and again it may seem a hopeless task, there are times when such marked improvement takes place, that one takes heart and feels that one's efforts are not quite thrown away.

Now, although this matter of scaling seems so simple there are many details to which I would invite your attention. To begin with, it is the tartar *beneath* the gums that is the most important to remove, and I need not add the most painful. How then shall this be done in the easiest manner for the patient? Should the tartar be removed by the push or the pull method ? To this I would say that each has its merits, and that with advantage each in its turn may be employed, but that generally speaking less pain is inflicted if that tartar lying beneath the gum be removed by the *push* cut, but thin fine instruments should be used and care taken that the instrument be made to stick as close as possible to the tooth, and, of course, great care used to have it perfectly guarded and under control, to prevent it going further than is desired, or slipping into the gum when the accretion you are attempting to remove gives way to your pressure. I have found, myself, that with the set of instruments introduced by Dr. Cushing, scaling can be affected in the quickest and easiest way. They are practically very fine chisels of different sizes and shapes, and remarkably well tempered, but, in addition to these, I also use a pair made after Dr. Harlan's pattern on the same principle, to get more easily at the back teeth. Other favourite patterns of mine are those of Dr. Atkinson and Dr. Howe, and I also find very useful large spoon-shaped excavators, and where large masses of tartar have to be removed, I often use large chisels of the so-called heroic pattern. Numbers and shapes may be almost indefinitely increased, and each individual operator will probably have his own pet instrument, or set of instruments, but whatever pattern is being used, I would insist that the smallest and thinnest possible for accomplishing the work will be the best when removing that deposit near the gum margin, and would reiterate that the greatest care should be exercised to have it well under control, to prevent slipping and wounding the gum.

The older makes of scalers, which I am glad to think are now almost obsolete, used to be a great deal too large and bulky, with the undoubted disadvantage that quite unnecessary pain was given to the patient, and one does not wonder that after such weapons were used, a patient would hesitate facing such an ordeal a second time.

Now as to the *modus operandi*: First, see that your patient's dress is properly protected by a cloth, to avoid possible splashes of blood during the operation, and that you have a supply of tepid water to hand for the patient's use.

I usually begin the removal of the tartar where the deposit is greatest, *i.e.*, round the lower incisors, and with one of Cushing's chisels pass carefully down the labial portion of the teeth, standing behind the patient, guarding the instrument by pressing the free fingers on the tips of the teeth, then, unless the teeth be too closely set, which, however, rarely happens, I pass it between the teeth as far as I can reach from side to side, generally from bicuspid to bicuspid. This takes off the tartar in large flakes on the lingual surface, at the same time it removes the interstitial deposit and often leaves little to be done on the inside. When the tartar is not very large in quantity, and the gums fairly firm and healthy, this can be accomplished almost without causing any hæmorrhage, but I prefer starting on these lower incisors, because when the tartar is in large quantities, or the gums at all congested, the bleeding is a source of hindrance and prevents the thorough removal, but by taking this away first, as well as we are able, and then going to the back teeth, one finds the hæmorrhage stopped by the time this latter has been accomplished, or at any rate so reduced that one can see more clearly to complete the operation.

A large metal syringe—I use one of Mr. Hunt's pattern myself, only made a larger size to hold twice as much water,—will be found a most useful help to you during the process, as with it the tartar and blood can more thoroughly be removed than by any rinsing on your patient's part, and in those cases when pockets in the gums have formed, a small Dunn's syringe is very serviceable, not only for washing out the debris, but also for passing down peroxide of hydrogen, or any other drug you may wish to use. It will often help you greatly during the process, if you take a large pledget of cotton steeped in peroxide of hydrogen and mop round the teeth, as it not only shows up the teeth more clearly, but also helps to arrest the hæmorrhage. When the tartar has been removed with instruments as thoroughly as you can, the teeth should then be polished carefully with strips of cane, or preferably cotton wood which has a fine fibre, and with wood points or leather buffs on the dental engine loaded with fine pumice powder. For this purpose some fine pumice with peroxide of hydrogen, glycerine and eau de cologne should be kept in a large-necked bottle with glass stopper, as it will be found both better for use and more agreeable for your patient than plain pumice, the glycerine making the powder stick to its work better than in a dry form.

In most cases, this careful removal of tartar and treatment as described will be quite sufficient, but in those cases where pockets have been formed and pyorrhœa alveolaris actually established further and prolonged treatment may be required, but I do not propose to go further into that this evening. But supposing you have thoroughly done your part as far as the operation is concerned, your duty to your patient is not quite fulfilled till you have given careful directions how the teeth are to be kept, and have impressed each patient with the necessity for regular daily and absolutely thorough personal attention.

I think the teeth ought to be thoroughly brushed with powder night and morning, and those who can spare the time and have the opportunity will reap the full benefit, if they will take the trouble to cleanse after each meal.

It should be all looked to also that the brush or brushes are kept in good order, and when wearing thrown away,—I say brushes, for I regard it as quite necessary to have at least two in use if they are to be kept in working order, as each brush should have ample time to dry between each time of using, and should be kept in such a position that the water may drain from it and the air circulate through the bristles, and not shut up as it too often is in one of those ordinary china dishes. Then as to the use of the brush, this should be by an up and down movement as well as across the teeth, for by this means particles of food are more thoroughly displaced, nor should the brushing of the inside of the teeth be neglected, and in those cases where the lower incisors have an inward and backward leaning, a small brush at an angle to the handle is essential. I would also advocate the brushing of the gums. I do not mean of course the brushing to such an extent as to cause soreness and laceration, but sufficient friction should be used to bring the blood to the parts for their proper nourishment. In these days, not only is our bread so finely prepared and robbed of its coarser elements, but most of our food stuffs are so finely and delicately cooked, that the teeth are not called upon to do their legitimate and proper work. They are not used as vigorously as they ought be, and consequently do not get cleansed in mastication, nor do the gums get that amount of stimulation which would properly fall to their lot, so that the brush should in some measure be used to counteract this non-usage. Further than this, the use of quill tooth-picks and waxed floss silk should be recommended, as with these, particles of food, etc. may be removed from between the teeth that a brush cannot effectually get away, and thus not only lodgement of tartar be prevented to a very great extent, but also the ravages of caries be much lessened.

I feel this subject is so full of detail that it is by no means exhausted, but I will not trespass further on your patience, save to remark that if this so elementary a subject be fraught with so much importance and so many matters of detail, how much more will this hold good with all the multifarious duties and operations of our every-day practice. You, as young men, will find at the outset that you will have more time at your disposal than will be the case in after years, and if I may suggest one more subject in which attention to detail is of great importance, it is that of note-taking and case-recording. I cannot lay too much stress on the value of this, and though I can only just mention the subject in passing, should like to feel assured that each one of you, even whilst here, had made a commencement in recording every operation.

It does not consume much time if systematically done, and becomes so much matter of habit and second nature that the labour of it is scarcely noticed. But how invaluable in after life would all that mass of information be if each one started from the beginning and continued such a record, and who can say what facts might not be brought to light, and what deductions drawn from these facts, leading possibly to the alleviation of pain and improved methods of practice, and a large increase in the knowledge of the whole profession.

It only remains now for me to thank you for your kind and patient attention, and to wish the society and every individual member of it a truly prosperous and successful future.

ON NITROUS OXIDE.*

By Mr. Whittington.

Mr. President and Gentlemen,

In choosing a subject for your discussion this evening, I was influenced by the fact that these meetings were convened for the purpose of advancing the elementary knowledge of we "embryo" dentists; and not for the exposition of highly scientific themes far beyond our sphere. I propose, therefore, to read to you a paper, as practical as possible, on "Nitrous Oxide," being a subject about which we all understand, or should understand, something, and a branch of our education very frequently neglected. I shall endeavour to direct these remarks so as to be of some slight assistance to my fellow students; and not as an essay to those of my seniors more highly versed on the subject. Therefore, I must ask forbearance if I mention many very elementary points.

The time at my disposal being somewhat brief, I will attempt to simply pluck the highest roses of my subject for your edification, but if I only succeed in reaching the altitude of the thorns; and if I only partially succeed in rendering verdant these barren facts, I hope you will consider it due more to a lack of opportunity and ability rather than of endeavour.

The anæsthethic properties of "Nitrous Oxide," "Laughing Gas" or "Protoxide of Nitrogen" as it is sometimes called, were first discovered in 1799 by the renowned Sir Humphry Davy. Many applaud him for the boon he conferred on the "colliers" by the invention of his "patent safety lamp." But all the humane inhabitants of the civilized world (ourselves in particular) should eulogize him for his disclosures concerning Nitrous Oxide. Horace Wells, in the land of "democracy" and "tall stories," can lay claim to having in 1844 been the first to use "gas" for dental purposes. Dr. T. D. Evans, of Paris, administered it in March, 1868, for the first time in England, at "The Dental Hospital of London." From that date, the renown of this anæsthetic agent spread far and wide, until to-day there is scarcely a town anywhere in which one cannot reap its benefits.

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*A paper read before the Students' Society, Dental Hospital of London.

Nitrous Oxide is a colourless gas, of agreeable odour and sweetish taste, which can be condensed into a transparent liquid, under a pressure of about 50 atmospheres (at 45° F.). It is usually prepared from the salt nitrate of ammonia, which is decomposed by heat (about 460° F.), and purified by passing through water. A solution of proto-sulphate of iron, and a solution of caustic potash.

Occasionally it is stored in gasometers, but it is generally admitted now-a-days that it keeps better when compressed into steel or wrought-iron bottles. In fact, Messrs. Ash and Sons assert that in the latter condition it will remain pure indefinitely; which fact entirely vanquishes any argument that can be used in favour of the former. If two gas bottles with a double-union and a gas quieter be used, it would seem almost impossible to wish for any better appliance.

Messrs. C. Ash and Sons have kindly lent some gas apparatus for your inspection, so there will be no necessity for me to waste your time by describing any, but nevertheless I will just mention a few things which are generally considered the best.

Of Dr. Hewitt's or of Messrs. Barth and Co.'s. apparatus can be said, like of the famous advertised soap, "Once used, always used." But though giving a preference to one of these, I wish you to distinctly understand as far as other facepieces and stopcocks are concerned, that the skill and practice of each anæsthetist will assign to the appliance which he is accustomed to use the title of being the best in his own hands. As the poet says—

> The coarsest reed that trembles in the marsh,
> If heaven select it for its instrument
> May cast celestial music on the breeze.

Cattlin's bags, and Clover's facepiece, with a soft pneumatic pad (or modifications thereof) both almost universally used need no comment, but the advisability of using a supplemental bag is questionable. Mr. A. S. Underwood claims for it this advantage, that whilst it continues to empty and refill there can be no doubt that respiration is being properly performed. Against its employment 'tis urged that the patient inspires the carbonic acid of his own expiration, although Mr. Braine attaches no importance to this objection. I might, perhaps, mention that a supplemental bag is not favoured to anything like the extent it used to be.

Every one is familiar no doubt, with some description of "gag" or "mouth prop;" which range from the most complicated pieces of mechanism down to an ordinary cork. Still some attention must be called to one of its principal functions, which is seldom noted. A "gag" is not used to keep a patient's mouth open, *simply* to facilitate a surgical operation, but also to enable the anæsthetist, in case of respiratory obstruction or failure, to immediately pull forward the tongue and press forward the lower jaw. If one were not used in such a case to force the mouth open, especially if the muscles were rigid, would waste valuable seconds and perhaps necessitate the performance of the kindly offices of the coroner.

"Tongue forceps," "nitrite-of-amyl capsules" and "tracheotomy tubes" should always be at hand, in case of accident, though they are one and all dispensable fortunately in the great majority of cases. Tongue forceps with deeply serrated blades are the best, because of the indentations they make upon the tongue, thereby applying a greater stimulus to the mucous membrane, which is believed to exert a reflex effect. Also for operations in the mouth, a "Mason's gag" an "oral spoon" or some sponges might be necessary.

Nitrous Oxide acts as an excitant and produces intoxication if taken in moderation, but induces narcotism and insensibility when inhaled in large doses. Like other general anæsthetic agents it paralyses the nerve centres in a certain order, impelling into abeyance their different functions, will briefly call your attention to this order, and also to the principal functions of these centres. Mr. Underwood tabulates them thus:—

1st. The cerebrum, destroying volition, so that action is no longer controlled by the intelligence.

2nd. The sensory centres of the spinal cord, after which movement is erratic and does not depend upon a sensory stimulus.

3rd. The motor centres of the spinal cord, after which movement ceases.

4th. The sensory and motor centres of the medulla, after which respiration and the heart's action ceases.

These are the direct effects upon the nervous system and are produced by the gradual deoxygenation of the blood.

There is some reason for supposing that Nitrous Oxide acts by causing considerable swelling and hyperæmia of the cerebro-spinal system (Dr. Dudley Buxton), it is not, however, at all certain by what particular action chloroform and ether produce their narcotic and anæsthetic effects.

Before commencing the actual administration, there are several precautions and facts that it is as well to take mental note of. There is the question of an examination of the patient's chest. It is well known that if, from such an examination, a weak or diseased heart, or a lung affection were diagnosed, the anæsthetic would be exhibited just the same with practically no risk. Because every painful operation becomes less dangerous to life when performed under an anæsthetic, or as Dr. Snow said: "every case for an operation was a case for an anæsthetic." Therefore, from one point of view, such a search for disease is quite a waste of time.

We must also look at the question in another light; Mr. Braine recommends such a research, and gives as his reason that: "In case of accident the anæsthetist might be adjudged guilty of carelessness if he did not," and asserts that "the patient is reassured by such proceedings." On the other hand, Sir Joseph Lister says "he always omits it as having a tendency to frighten a patient." I will attempt to make a compromise, and suggest making an examination of only those patients who express fears or doubts of their ability to take gas, those who complain of organic weakness, or those who request it.

By some means or other, it is almost imperative that the fears of a patient concerning the safety of the gas and the painlessness of the operation under its influence, should be allayed. For by so doing, much struggling and inconvenience to all concerned will be avoided and much time saved.

Artificial teeth are frequently both ornamental and useful, but a patient must always be deprived of them before taking gas. I refer to full dentures (which are, I notice, occasionally excepted) as well as partial pieces. And almost the same can be said of collars, corsets, waistbands, or anything else tight about the patient. Or if the patient himself is in that condition he might be removed.

Nothing need be said about the patient's position, except that the head should be as nearly as possible in a straight line with the axis of the body. Because this is more or less essential to *free* breathing, and will be very noticeable in patients with large tongues or long uvulas. And the hands should be placed upon the lap with the fingers interlaced. This precaution should never be omitted when operating upon neurotic patients.

If "forewarned is forearmed," then to know what obstacles to expect is to be prepared to cope with them. Therefore, I will mention the principal difficulties to anticipate with unnatural constitutions. Perhaps the most important thing to know in this respect is : that anæsthesia deepens after the removal of the facepiece in patients suffering from advanced phthisis. It will, therefore, be necessary in such cases, to be very careful not to produce deep anæsthesia before ceasing to exhibit the gas.

Respiratory spasms or noise may be anticipated with muscular and alcoholic patients, those suffering from extreme obesity, and those accustomed to large doses of morphia or opium. Alcoholics also, as well as children, frequently become rigid and opisthotonic. After menorrhagia, or any considerable loss of blood from any other cause, or after opium, morphia, or in anæmic patients, anæsthesia is produced very rapidly, so careful watching will be necessary with these to prevent an overdose ; while full-blooded patients require a large quantity of gas.

While dealing with the difficulties we may have to contend with, I cannot refrain from mentioning this fact, that it has been my misfortune to notice the necessity for artificial respiration to be performed on two patients, both women, who suffered from intercostal and shoulder rheumatism, and in neither case could a reason be found for the cessation of breathing. One of our anæsthetists remembers the case of a woman who stopped breathing after taking eight or nine inspirations of gas, and he had to perform artificial respiration to restore her. To the same patient he again administered gas about a week afterwards with exactly the same result, and he is quite at a loss as to the reason. On inquiry, I found that this woman was also a martyr to rheumatism, especially in the shoulders. But, unfortunately for the cause of science, I have up to now been unable either to confirm or dispel my fears as to the advisability of adding any special injunctions for patients of a rheumatic diathesis. For these cases I have mentioned may be mere coincidences, but the question is worth investigation.

Very little need be said about dieting patients preparatory to inhaling gas, unlike for either chloroform or ether. But it is as well to know that if given upon a full stomach, nausea is usually the result. If upon an empty stomach fainting or syncope is a frequent consequence. It would, therefore, appear that the best time for a patient to receive Nitrous Oxide is about 2½ or 3 hours after a meal. Before breakfast time is sometimes advocated, but it is seldom convenient to all parties concerned.

For very feeble patients, it is an advantage to prescribe about two tablespoons full of brandy and water in equal parts, to be taken quarter of an hour before the operation.

The last thing to do before putting in the "gag" is to test the facepiece, by breathing into it two or three times to see that the valves are in perfect order. And before taking up a position, at the side of (or behind) the patient, expel all the air possible from the apparatus.

Mr. T. E. Constant has latterly written a treatise on "The Administration of Gas," and therein dictates as a hard and fast rule (does not suggest, remember) that "the anæsthetist shall stand behind his patient and manipulate the facepiece with the right hand." Now, when I state, as examples of the majority, that Dr. Dudley Buxton, Mr. Woodhouse Braine, Dr. Hewitt, and Mr. Rowell stand at the left side of the patient, and use the left hand in applying the facepiece, it will be useless to ask you not to take that as well as some other rules that Mr. Constant states without some question.

From the dental operator's point of view, it is much better to have the anæsthetist at the left side, instead of behind the patient, and is especially noticeable when right lower teeth have to be extracted, the dentist himself usually wishing to stand at the back.

I must refer you to either of our standard works on anæsthetics, as to the proper adjustment of the gag, because different gags and mouths require special considerations, and time is too precious to even nominate them all.

Perhaps the greatest difficulty in the practical administration of Nitrous Oxide is arranging the facepiece comfortably upon the patient, so as to exclude any possible "unintentional" entry of air. I purposely say "unintentional" because some anæsthetists prefer giving occasional breaths of air to prolong the period of unconsciousness. Mr. Rowell advocates it, as Dr. Hewitt does $N_2O + O$, but I shall not have time to-night, unfortunately, to consider either of these methods.

My first instructions on the subject were, grasp the facepiece firmly with the left hand, putting the fingers as nearly as possible around its margin, with the palm of the hand directed upwards. Then place the lower or broad end on the patients chin, and using the point of contact as a fulcrum gradually bring the upper or narrow end into contact with the nose, at the same time pressing it slightly downwards and towards the face. But it will be necessary for every one to use his own discretion in the use of this suggestion.

Some advise soaping a patients beard, if he has one, but in the majority of cases a little extra pressure over that part of the face will be sufficient to exclude the air, and at the same time will save inconvenience to both operator and patient.

The gag and facepiece being adjusted, the patient should be allowed, first of all to inhale air two or three times, this will tend to allay any fear and may probably induce normal breathing. Then turn on the gas at the termination of an expiration, not during inspiration. By taking this precaution, it will lessen the quantity of air in the lungs, and insensibility will supervene the quicker.

About this stage of anæsthesia, a patient begins to be more acutely sensible to sound. Therefore, it is very necessary to observe silence, as alsolute as possible, or struggling and bad dreams may result. But although advising strict silence, yet it is quite permissable for the anæsthetist to talk to his patient. In fact, in dealing with nervous patients and children, it is much better to continue to converse with them in a reassuring manner until they are unconscious.

> For what's more grateful to the ear
> Than the voice which speaks to cheer?

There are four stages of anæsthesia through which a patient passes, each of which have more or less characteristic signs, and which should be thoroughly understood.

Stage I. *or disordered consciousness.*—There is dilated and mobile pupil, quickened pulse, with, as a rule, audible deep breathing.

Stage II. *or abolished consciousness*, *but persistent reflex.*—Still dilated pupil and quick pulse, whilst respiration is irregular and muscles rigid. It is during this stage that the seriousness of the operator is occasionally turned into merriment, by those frequently ludicrous remarks which patients sometimes make on returning to consciousness.

Stage III. *or Surgical Anæsthesia and almost abolished reflex.*—The *pupil* is slightly *contracted* and eyeball fixed with slightly slower pulse, whilst the breathing is irregular, accompanied with jactitation or stertor. In this stage if either chloroform or ether were used there would be complete relaxation of the muscles, but it is seldom so when Nitrous Oxide is the agent.

Stage IV. *or Overdose, and Paralysis of Respiration and Circulation.*—The pupil is again dilated with slow pulse and irregular and jerky breathing. The face assumes an "ashy" colour and respiration, then circulation fails. Too much stress cannot be laid on the fact that respiration fails before circulation, and by at least half a dozen seconds.

An anæsthetist can, as a rule, from much practice distinguish by the aid of his powers of perception alone these different stages, but in case of necessity there are certain ways to test for them. For instance, a patient will close his eyes if, in Stage I., on the approach of a finger towards it ; but in Stage II., will only close the eye if it is touched ; while in Stage III., the eye will not close, as a rule, even if the conjunctira is touched. Unfortunately, this last is not an infallible sign. Again, there is the size of the pupil, which is dilated in Stages I., II., and IV., but contracted in Stage III. It is during this Stage III., or Surgical Anæsthesia, that an operation may be allowed, and on no condition should it begin until this condition is reached, nor prolonged after this stage has disappeared. And the same caution can be applied to removing the "gag" or otherwise disturbing the patient during the return to consciousness, for the slightest touch might give the patient the hallucination that he had felt the whole operation. A sure sign when present of complete anæsthesia is true laryngeal stertor. A specie of snoring mixed with choking and gasping and mucous rattling, which is caused by the vibrations of the arytæno-epiglottidean folds of mucous membrane, which approximate each other and the epiglottidean base. This true stertor must be recognised from the flapping of the velum palati of the habitual snorer.

Dr. Dudley Buxton, Mr. Rowell and many others, pay no attention whatever to conjunctival reflex, but simply watch for irregular breathing followed by either jactitation or stertor. One or other of these signs is, they say, invariably present, but it must be remembered that it may be only for a moment. The time taken to produce complete insensibility averages between twenty and forty seconds, and that condition lasts from thirty to forty or even fifty seconds, Mr. Braine recording a case at this Hospital in October last of seventy seconds anæsthesia. The best way to test as to whether the operation should cease or not, is to tell the patient, in an imperative tone, to either open or shut the eyes. It is permissable for the surgeon to continue for about four seconds after the patient is able to obey that injunction. Patients regain their consciousness in the inverse order to their losing it.

Unlike the sequence of other anæsthetics all traces of Nitrous Oxide usually pass from the system in about three or four minutes from the cessation of its exhibition, and its after effects, if any, are generally so slight that they are not worth considering. Though not frequently practised, yet I have authority for the statement, that a patient can, with as little risk as normal, be kept under the influence of Nitrous Oxide, for nearly any length of time necessary for a surgical operation. The mode of procedure is as follows :—Exhibit the gas as usual until Stage III. is reached. Then take away the face-piece, but as soon as the patient begins to recover, replace it, and administer the gas again, repeating the operation as long as is required. Mr. Carter Braine treated a case in this manner a short time ago, which lasted upwards of a quarter of an hour.

Too much stress cannot be laid upon the importance of watching with unremitting vigilance the patient's breathing. If that is done there is no danger to fear from Nitrous Oxide. For numerous experiments point to the fact that if it is given in excess, respiration ceases many second before the circulation and the hearts action. All our difficulties begin with respiratory failure. One great fact in connection with this must not be overlooked, namely, that the heaving of the chest is no criterion that respiration is going on. On the contrary, the heaving will continue some seconds after breathing has ceased. Because it is usually due to obstruction and not to paralysis of the medullary centre. The gradual emptying of the gas bag and the movement of the valves of the facepiece are the best tests that breathing it going on naturally. If an operation is being performed in the mouth, care must be taken, lest the tongue be forced too far back and so obstruct respiration, and that no foreign body, such as a tooth or stump, be allowed to slip down the trachea.

An "oral spoon" should be used more especially when upper wisdom or lower bicuspid stumps are being extracted.

The anæsthetist should be prepared himself to counteract the forces applied by the dental operator to the lower jaw, and not trust to the patient's muscles to prevent dislocation. Should syncope appear imminent, Mr. Braine says that a few whiffs of Nitrite of Amyl furnishes the best and quickest restorative.

The treatment for respiratory failure is :—(*a*) If obstructive, draw forward the tongue and remove obstruction. (*b*) If non-obstructive, perform artificial respiration.

The treatment for circulatory failure from whatever cause is :— 1st. Put patient flat with the head low ; 2nd. Apply Nitrite of Amyl to nostrils and 3rd. Perform artificial respiration, and inject brandy or ether, and apply hot sponges to the heart.

Some anæthetists, Dr. Dudley Buxton *par exemple* advise inverting after having pulled tongue forward, for either respiratory or circulatory troubles. This stimulates the heart in two ways, by giving it, a full supply of blood, and by forcing the diaphragm against it, owing to the weight of the abdominal viscera.

A well-known anæsthetist says :—If anything goes wrong, remain quite cool and collected and take the resuscitatory measures in the following order. 1st. Remove anæsthetic; 2nd. Draw tongue forward ; 3rd. Force the lower jaw forward ; 4th. See that the air passage is quite clear ; 5th. Perform artificial respiration ; 6th. Perform laryngeal tracheotomy.

In conclusion, gentlemen, I wish to thank you for your kind attention. Although my subject is one which to many minds would be difficult to surround with a halo of romance, or cloak with historic interest, yet, I hope these somewhat disconnected thoughts will prove of some interest to my fellow students, in whose prosperous careers is evolved the thorough knowledge of all connected with the science of dentistry.

Therefore, like valiant warriors, let us burnish those weapons with which we anticipate to achieve success, a success partially dependent upon Nitrous Oxide, which reduces to but a passing dream, operations, the reality of which is a series of tragedies in one act.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Usual Monthly Meeting of the above Society was held on the 6th ult., the Chair being occupied by Mr. R. H. Woodhouse, in the absence of the President. The meeting was largely attended.

The minutes of the previous meeting having been read and confirmed, Mr. F. W. Barrett, L.D.S., Eng., signed the obligation book, and was duly admitted a member of the Society.

The following nominations were made:—Messrs. P. S. Durwand, L.D.S., Ed., of Edinburgh, Jas. Leslie Fraser, L.D.S., Ed., of Inverness, Gordon A. Shiach, L.D.S., Ed., of Elgin, A. Hopewell Smith, L.R.C.P., M.R.C.S., L.D.S., of London, Jas. Stewart, L.D.S., Ed., of Perth.

The following gentlemen were balloted for, and duly elected members of the Society:—Messrs. C. F. P. Baly, L.D.S,, Eng., E. J. Blaine, L.D.S., Eng., T. H. Clarence, L.D.S. Eng., Ernest Gardiner, L.D.S., Eng., S. H. Haywood, L.D.S., Eng., G. Northcroft, L.D.S., Eng., E. H. Preedy, L.D.S., Eng., H. J. Stevens, L.D.S., Eng.. E. F. Smith, L.D.S., Eng., C. J. Tisdall, L.D.S., Eng., D. P. Gabell, L.D.S., Eng., W. H. Goodman, L.D.S, Eng., of Exeter, A. Curling Hope, L.D.S., Eng, H. Curling Hope, L.D.S., Eng., G. Martin, L.D.S., Eng., of Bradford, Ernest Weston, L.D.S., Eng., of Isle of Wight.

Neither the LIBRARIAN nor the CURATOR having any reports to make, Mr. HERN was called upon for a casual communication. He said that in the first instance he would mention a case of uni-lateral paralysis of the soft-palate. The interest turned very much upon being able to see the patient, but, unfortunately, though she had promised to be present she had failed to attend. He would, however, say that the tone of voice and method of speech was so similar to ordinary cleft palate that it was mistaken by the Secretary of the Surgical Aid Society for a case of that kind. The symptoms dated from an attack of scarlet fever at the age of 3; the patient was a woman aged 20. Mr. Hern, feeling that nothing could be done mechanically, was anxious to see if anything could be done at the General Hospital, and she was admitted to the Middlesex Hospital under the care of the physician in charge of the electrical department, but they were not able to deal with the case. The patient complained of great annoyance from the fluids escaping through the nose when drinking; the right side of the mouth was drooping, pendulous, and also insensitive to touch.

Mr. Hern also took the opportunity for exhibiting two instruments for use in pivoting. It was well known in putting in pivots how important it was to cut the anterior surface of the root sufficiently under the gum margin without injuring the gum; to do this was the object of the first instrument, for which he did not desire to claim originality, it being simply a modification of an already existing form. His modification would not only cut the root under the gum margin without wounding the gum, but would cut it to a shape to which the tooth could be easily fitted. His second device was for taking a good model of the root when it was cut; it consisted of some small shields, shaped something like the root, with a couple of pieces of soft copper which was driven down so as to give a very accurate delineation of the root.

Mr. Brunton showed an instrument for treating the canals in buccal roots and pre-molars for filling. It consisted of a small piece of piano wire inserted into a chuck to run in a right angle on an engine acting as a reamer, and, in Mr. Brunton's opinion, simplifying the operation. He also showed a new form of disc carrier, the novelty of which was that the two parts of the head, instead of being flat as ordinarily, had grooved surfaces which interlocked with each other, for which it is claimed that the disc was gripped much more firmly. Mr. Brunton exhibited, in addition, a method of reducing the heat of the flame of a spirit lamp by introducing through the wick a piece of platinum wire; by this means Mr. Brunton said it was possible to anneal gold cylinders in the flame without any risk of melting.

Mr. CORNELIUS ROBBINS, for Mr. Fripp, showed models illustrating the transposition of canines.

Mr. H. BALDWIN described a method of repairing bridge-work by soldering *within* the mouth. He apologised for calling attention to the matter, and said, he would not have done so but for the fact, that it had helped him out of a difficulty on several occasions. He adopted the plan for attaching fresh porcelain teeth to bridge-work, or fresh crowns to Richmond crowns, and similar processes of that sort. After several unsuccessful experiments with the blow-pipe, he adopted the simpler plan of using an ordinary soldering iron of small dimensions, and found that it was possible with very fair ease to attach crowns by means of ordinary soft solder, or with special easy fusible solder in difficult cases, the latter is to be obtained from vendors of watchmakers appliances under the name of " pearl solder" and fuses at a very low temperature indeed. His method was to take a tooth and back it with a very thin, or ordinarily thick back, and then to tin the surface and the back of the tooth out of the mouth, and then to tin the gold and platinum back which it still fixed in the mouth. It was important to keep everything dry, by means of rubber dam if possible, and it was a good plan to tack an asbestos twist round the space about to be soldered. Having got the work clean and dry, the tooth had to be placed in position, the soldering iron heated, and with a little of the solder upon it made to touch the junction of the two backs, and almost instantly the effect was such that it ran through and soldered the teeth tightly on.

The Chairman remarked that he did not quite understand how the mouth was protected.

Mr. H. Baldwin: Simply with the rubber dam and asbestos fibre.

Mr. G. Brunton suggested that if the operator used a little common soap with the asbestos it would prove a better protection against heat.

Mr. G. W. Watson's paper on "Pathological Conditions of the Dental Pulp" was then read by the Secretary, Mr. Robbins, the author not being able to attend. The paper was accompanied by limelight illustrations thrown on a screen.

Pathological Conditions of the Dental Pulp.

After briefly defining the histology of the pulp, the author stated that the pathological conditions might be classified as (1) Irritation of the pulp. (2) Acute pulpitis. (3) Chronic pulpitis. (4) Abscess of pulp. (5) Hypertrophy, Atrophy, and Degeneration. (6) Secondary hard formations.

Irritation of the pulp was, he said, usually the result of injury to the enamel or dentine produced either by caries, abrasion, or erosion, or thermal changes, this sensitiveness to change of temperature, it would be borne in mind, was one of the normal properties of the pulp; the irritation was conveyed to the pulp by means of the dentinal fibrils and induced a certain amount of hyperæmia (accompanied by sharp intermittent pain, generally in the neighbourhood of the ear), to the part opposite the lesion, distension of the blood vessels ensued in greater or less degree, but without alteration of the tissue elements of the pulp. Should the conditions continue or recur frequently, the vessels would fail to contract owing to partial paralysis of their vaso-motor nerves, and the permanent distension of their walls, and ultimate exudation of their contents would result, producing acute inflammation. On the other hand, if the irritation was removed the pulp resumed its normal condition. In all cases of pulp irritation which Mr. Watson had examined small nodules of secondary dentine had been present, and he thought that they might be answerable for the neuralgic pain associated with this condition. Where pulp irritation was caused by exposure, the acute condition would be speedily reached and terminate in suppuration of the organ.

Acute pulpitis was more usually a result of pulp exposure, rather than a sequence of long standing irritation. Sometimes only a portion of the pulp would be implicated, and in such cases the affected area would be of a bright red colour shading off from the periphery to the centre, the numerous blood vessels would be distended with blood, the nerve bundles and connective tissue cells in the neighbourhood of the inflammation would give evidence of structural changes, and a molecular cloudiness due to the presence of numerous fat granules would be observable. As the disease extended the normal elements of the pulp would be replaced more and more by inflammatory exudations and fat cells, and the distended blood vessels would be liable to strangulation, resulting in necrosis of the organ. Acute pulpitis might also be followed by suppuration, and the exudation of the cells and tissue elements of the pulp would proliferate and become converted into pus cells. Curiously the odontoblast cells in acute pulpitis persisted to the last, and only succumbed when suppuration set in. In very acute cases accompanied by exudation, the colouring matter of the blood was forced into the tubules of the dentine and produce red staining. This staining was sometimes to be noted as a result of application of arsenic to the pulp when actually inflamed.

Chronic pulpitis, though more frequently met with than the acute form, was often unnoticed by the patient owing to the comparative absence of pain associated with it, but it was less amenable to treatment. At the point of exposure and for a slight depth beyond the surface the pulp was highly vascular and red, while a serous fluid of disagreeable phosphatic odour exude from the surface. The odontoblast cells in the neighbourhood of the inflamed part would be found to be atrophied, and would rapidly disappear as the ulcerative process extended. Inflammatory degeneration would follow, or the chronic form might take on an acute form, terminating in suppuration, or the lecturer thought it likely that micro-organisms might play an active part in the ulceration, but it was a subject which in his opinion required careful investigation before anything definite could be said. The occurrence of abscess of the pulp was usually coincident with exposure of the pulp to the fluids of the mouth, which invariably contained pyogenic organisms. The blood vessels in the focal area of suppuration would be found dilated into ampulæ, the odontoblast cells would be gradually undermined and destroyed, and the nerves speedily disappeared. This destructive process might proceed until the pulp became gangrenous, or suppuration might suddenly stop and fatty degeneration ensue. A form of abscess of the pulp spoken of as partial suppurating pulpitis had recently been drawn attention to, and was always associated with chronic alveolar abscess. Several authors had mentioned the fact of small localized abscesses being found in the substance of the pulp, but as far as Mr. Watson was aware no one had hitherto remarked upon the peculiarity of this form of abscess being associated with the presence of living pulp. Hypertrophy of the pulp was of common occurrence, and consisted in an insensitive hypertrophic growth bulging through the pulp chamber and proliferating and filling up the carious cavity with a red fleshy mass. The origin of the growth the writer regarded as due to the numerous micro-organisms present in such cases, not, as more commonly held, to the effect of the irritating nature of the saliva. The external surfaces of these growths were sometimes covered with squamous epithelium. Several authors had mentioned the fact that the hypertrophied growth sometimes became calcified. Degenerations of the pulp as a sequence of chronic inflammation, and as a result of old age, were not uncommon, and might be divided into fatty degeneration, areolation, fibrous and calcareous degeneration. Fatty degeneration is a result of sub-acute or chronic pulpitis, was invariably an indication of diminished vitality in the organ. A pulp thus affected was reduced in volume, somewhat opaque, of yellowish red or grey colour, and felt unctuous to the touch. As the process developed, the sheaths of the nerves, the coats of the blood vessels, and to a certain extent the cells of the pulp all indicated fatty metamorphosis, and scattered through the whole of the organ were numerous fat globules which obscured its ultimate structure. Areolation of the pulp seemed to be somewhat rare, and developed as a result of chronic inflammation. The pulp would be observed shrivelled up, and so much reduced in size as to resemble thin membrane. The cells and histological appearances generally of the pulp were entirely changed, a reticulum of fine fibrous tissue was developed, and, scattered through the mesh-work of fibres, were numerous oval cavities which in life were supposed to contain fluid. Fibroid degeneration, mostly observable in the worn-out teeth of old people, was brought about by defective nutrition of the pulp. Abnormal production of fibrous tissue was developed probably from the connective tissue elements of the pulp. Tortuosity and the distention of the vessels were usually present tending to partial stranulation, and the formation of a layer attached to tissue was the result of decreased nutrition. Calcareous degeneration should not be confounded with the ordinary calcified pulp nodules, the former consisted of a deposit of calcareous salt in the connective and other tissues of the pulp, due to inflammatory changes, and in shape oval, round, or cylindrical semi-transparent masses; being rugose on the surface they differed entirely from the nodular calcified masses found in the pulp, which were comparatively smooth. Their chemical composition was supposed to be principally phosphate and carbonate of lime. This pathological condition, Mr. Watson held, frequently originated severe neuralgic pain.

Turning next to the subject of *secondary hard formations* in the pulp cavity, the lecturer said that it was still somewhat doubtful if these formations were entitled to be classified as pathological or not, but he thought there was considerable evidence to support the contentions that they were. He would classify these hard formations into (1) Dentine of repair. (2) Dentinal tumour or odontome. (3) Nodular calcification of the pulp. (4) Osteo-dentine. Dentine of repair had been recognised for more than a hundred years, and was produced when as a result of disease of injury—a proportion of the protecting cap of enamel was removed, thereby exposing the underlying highly sensitive dentine; as a result, compensatory tissue was developed, though in some cases no secondary deposit took place. There was always a line of demarkation between the primary and the secondary dentine, and on maceration the repair tissue frequently separated from the walls of the pulp chamber. Dentinal tumours or odontomes originated at a time when the cells of the pulp chamber were in process of calcification, and grew from its roof or sides. The boundary layer was distinguished by the uniformity of the tubules extending from it, while the tubules of the new formation were very erratic in their course; these growths were usually round or oval in shape. Scattered nodules of dentine were frequently found present in the pulp, more particularly when the tooth was the subject of abrasion, erosion, or caries. At an early stage of the process dark outlined cells like bodies, probably calco globulin, would be found scattered through the substance of the pulp, varying very much in size, being in some instances microscopical, in others filling up nearly the whole of the pulp cavity or root canal, yellowish in colour, and nearly as hard as dentine. Like other pulps of secondary formation, the author was inclined to include nodular calcification as a pathological condition also, occurring as it did in teeth nearly always affected by caries, abrasion, or erosion, and as a result of a pathological condition of the pulp due to the above mentioned lesions. Osteo-dentine—a form of secondary dentine embracing both the characteristics of bone and dentine—was found in the pulp lying loosely or attached to the walls of the pulp canal in the shape of round, or irregular nodules. It was developed from the connective tissue of the pulp, and usually contained blood vessels, round which there were sometimes found a concentric arrangement of the tissues analogous to that of the Haversian systems in bone, agreeing also with this tissue in the presence of lacunæ. Some authors classified pulp nodules under osteo-dentine whether they contained osteous tissue or not, but the writer thought it better to apply the term only to tissues which exhibited all the characteristics both of bone and dentine. This kind of secondary formation, Mr. Watson said, was somewhat rare; he only obtained one good specimen out of 1,000 teeth examined.

Mr. F. J. Bennett said, that all would be willing to concur in a welcome to a paper from a gentlemen across the Border, and at the same time feel regret at his inability to be present. A large field had been covered by the paper, and each point had been somewhat hurriedly dealt with, but he was inclined to take exception to a remark of the writer that " dentine of repair was a sign of the beginning of the end, he thought that Mr. Watson might have confused dentine of repair with intrinsic calcification of the pulp. If secondary dentine were formed opposite a socket—very irregular though it might be—there would be no lost continuity between the hard tissue, the new formed tissue would be closely applied, not in connection with the primary dentine, and beneath that it would be found that the pulp would be perfectly healthy, and after that again one would again get normal regular dentine formed. It was not that the pulp nodules did so much harm to the pulp, but it was a sign in itself that the pulp was already undergoing fatty changes. If dentine of repair were the beginning of the end rodents would be badly off indeed, for no sooner were their teeth cut than they began to wear away, he thought the teeth in that way were not to be classed as in a state of degeneration at all. There were several other points he would have liked to have dealt with, for instance, pulps after being drilled into one found were still living, he had had a mortifying experience of that himself, a large abscess would form right over the root of the tooth. Mr. Watson gave an explanation of that, but he (Mr. Bennett) should be very glad indeed to hear from the Society their explanation of this practical point.

Mr. C. S. Tomes, being called upon by the Chairman, said tha he was afraid he had not much to say upon the subject; Mr. Bennett had already touched upon one to two points, and he (Mr. Tomes) endorsed what he had said. He had not been able to follow all the diagrams: some of the conditions described as pathological seemed to him very much normal. He did not know quite how to estimate the question of congestion of the pulp, although it was exceedingly easy to recognise with the naked eye it was difficult to do so microscopically; those very red and gorged with blood and those pink were nearly the same. Some means of measuring the size of the blood vessels was wanted. He hesitated very much in criticising in any adverse sense a paper the preparations of which they had not had an opportunity of inspecting.

Mr. J. Howard Mummery agreed with Mr. Tomes as to the great variety in the size of the blood vessels, but did not know whether the writer of the paper had stained at all for micro-organisms, they seemed to be all unstained. There was very little doubt but that these pathological conditions were due to micro-organisms. The pathology of the pulp was not a department to which he had devoted much time.

Mr. C. Spokes would like to hear a further expression of opinion from Mr. Watson as to the process of calcification, and what occurred in the case of what were called "pulp stones." It would be interesting to know whether Mr. Watson considered the process of calcification took place round the blood vessels, or whether it took place irrespective of the blood vessel which was included, so to speak, independently.

Messrs. Hopewell Smith, Baldwin, and Barrett also took part in the brief discussion.

The usual votes of thanks concluded the Meeting, and the President announced that the next meeting on April 10th, would be entirely devoted to Casual Communications.

DENTAL STUDENTS' SOCIETY, LONDON DENTAL HOSPITAL.

Ordinary General Meeting, held February 13th, 1893, W. H. Woodruff, Esq., President, in the chair. The minute of the previous meeting were read and confirmed.

On Casual Communication being called for, Mr. W. W. Gabell brought forward a case of an unerrupted lower canine in a woman 47 years of age. The history was that, ten years ago the patient had been troubled with gatherings after the extraction of the first bicuspid, at the time attributed to a possible remnant of the tooth. Four years ago patient came to the hospital with what was then diagnosed as "alveolus laid bare by the pressure of a lower denture," the case being eased the trouble ceased. Lately another bone-like projection appeared behind the incisors, and the old one having increased in size, pain was again caused by the pressure of the case. Diagnosis was at first difficult, owing to the tartar present, until the two projections were shown to be connected, and to be the ends of a lower canine lying horizontally in the jaws, as shown in the accompanying model.

Mr. Briant mentioned a similar case in a patient of 80, but it was an erupting canine.

Mr. Schelling exhibited a tooth showing gold filling which had stood forty year's wear, and were still intact, and also a double-rooted lower canine, and two lower wisdoms, illustrating extreme variation in size.

Mr. Gosschalk presented a case showing retention of the temporary teeth in a woman twenty-four years old, and stated that the same abnormality existed in some only of her brothers and sisters.

Mr. Parris wished to recommend a "simple sardine opener" for unflashing vulcanite cases, and also showed an universal lower tray and improved amalgam carrier.

Mr. Nicol, on behalf of Mr. Mosely, brought forward an improved Mason's Gag, on which Dr. Dudley Buxton made some comments.

Notice was given that Mr. Prideaux would again bring forward his amendment to rule XVI.

The President then called on Mr. Whittington for his paper on "Nitrous Oxide." See page 152.

In opening the discussion—

Mr. Gosschalk wished to know how the tongue was held forward during inversion of the patient, and also commented on the danger of using an elevator on patients under gas.

Mr. HALLIDAY mentioned that keeping the eyes open did away with the feeling of tension which was produced by the gas, and it also seemed to make the period of anæsthesia arrive sooner.

Mr. DODD, after congratulating the writer on his paper, regretted that he had omitted any mention of the imperative duty of supporting the patient's head, both in order to assist the operator and to prevent dislocation of the jaw, and also regretted that in addressing a society of future dentists, he had made no allusion to the difficulties that always encircle the operator when the patient is under an anæsthetic.

Mr. MELLEISH said that he considered the omission of advice, always to have a third party present a very important one (hear, hear).

Mr. EVANS said that he thought the writer did well to omit all mention of a dentist doing the entire operation by himself, as it was a practice to be discouraged.

Mr. DODD said that he had not intended to suggest such a course, but that it was sometimes necessary nevertheless.

Mr. GLANKEY also thought that it was sometimes necessary to undertake both duties.

Mr. AUSTEN said that in one or two cases he had seen, in which a partial return to consciousness had occurred during the operation, and evident signs proved that a certain amount of pain had been felt, complete forgetfulness of the unpleasant sensation was produced by a slight second application of the facepiece. Would Mr. Whittington explain this.

Mr. NICOL said precautions could seldom be taken in the cases of patients addicted to opium, &c., on account of the dentist not being aware of the fact. He also pointed out that when a patient was inverted the tongue would fall forward. There seemed to be no theoretical objection to the use of the supplemental bag, as after six or seven respirations in the ordinary way, the lungs contain only nitrous oxide, re-inhalation of which is innoxious, as the gas remains unchanged.

Mr. SEYMOUR described the disadvantages of small bore tubing, and further said that medical men did not as a rule know anything about gas, and when not engaged in sitting on the window sill, generally bungled things very much.

Dr, DUDLEY BUXTON, who on rising was received with loud applause, said, that as a medical man, he must join issue with what Mr. Seymour had said. He admitted, however, that many medical men, especially country practitioners, were inexperienced and inexpert in giving gas. There were, however, medical men and medical men, he advised dentists to make a careful choice before calling in a practitioner to assist them while extracting. Dr. Dudley Buxton said, that although Mr. Whittington had expressed regret at his want of eloquence, yet he, Dr. Dudley Buxton, had enjoyed Mr. Whittington's diction, and his not infrequent flights of rhetorical utterance. His paper was good, and he agreed with it in the main, although he took exception to some points. With regard to the reputed intensification of narcosis after withdrawal of the face-piece in phthisical patients, Dr. Dudley Buxton doubted its existence. He had never seen a case in which it had occurred, nor could he find the theoretical reason sufficiently proven to satisfy him. Dr. Dudley Buxton pointed out although no formal physical examination of a patient was usually possible before giving gas, yet, to an observant man, anæmia and many other maladies, even the opium habit, were evident by external appearances. A very practical point in connection with these cases of rapid anæsthesia, and one which Mr. Whittington had failed to note, was that the patient also rapidly resumed consciousness, and so there was very little time as a rule for operating. Spasm of the larynx under Nitrous Oxide must be very rare, for he had never met with a case of true spasm causing obstruction. Dr. Dudley Buxton pointed out, that if in alluding to rheumatism, the writer must carefully distinguish muscular rheumatism from rheumatic fever, in the latter case the symptoms might be the result of endo-cardiac mischief, which would explain what Mr. Whittington had spoken of. Such troubles associated with muscular rheumatism were in all probability merely coincidental. Dr. Dudley Buxton could not attach much importance to diet in ordinary cases, instances of syncope after fasting were certainly very rare, but sickness, and even fatal results, might arise from a stomach distended by food and gas, as in Mr. Watson's case, by causing pressure on the heart, and he, therefore, deprecated the giving of food shortly before exhibiting Nitrous Oxide. The speaker joined issue with regard to giving brandy to even delicate patients, as it was unnecessary, except in the rarest of cases, produced sickness, interfered with the process of quiet anæsthesia, and was liable to give rise to bad habits. Dr. Dudley Buxton then explained and demonstrated the proper way of applying the face-piece, and said that it was far better to face the face into the face-piece, and not the face-piece on to the face. He also recommended turning on the gas at the commencement of inspiration, in preference to just before the end of expiration, as that gave more time for inbreathing of the gas. The average time of gas anæsthesia was not forty seconds, but from twenty-two to twenty-eight seconds, varying slightly for age and sex, these figures being those given by the Committee of the Odontological Society of Great Britain which investigated the subject. As regards the prolonging of anæsthesia by repeated administrations, it was quite possible, and had been so continued for twenty minutes or longer, but the after results were, as might be expected, headache, exhaustion, malaise and vomiting, and therefore not to be advised. Mr. Bailey had used the method for prolonged operations, and Mr. Bird had recently mentioned a case of ovariotomy for which Nitrous Oxide only had been administered. He regarded the pupil as an unreliable guide. Dealing with the methods of resuscitating persons who became faint under gas, he said, that although inversion was "a large order," if it were promptly and properly performed, he advocated it most strongly as the very best treatment in cases of syncope, but reminded the Society it was not applicable to cases of respiratory failure. The tongue would during inversion take care of itself, as its weight carried it away from the glottis, and in order in this posture to perform artificial respiration it was only necessary to use lateral pressure on the abdomen and lower costal margin. In conclusion, Dr. Dudley Buxton expressed his opinion that the paper was a good, useful and practical one.

Mr. LOVE then spoke at some length about the supplemental bag, second application of gas, examination of the patient, and the use of gags.

Mr. WHITTINGTON in his reply said, he was extremely gratified with the reception his paper had received, and thought he had obtained the object for which he read it, namely, a good and interesting discussion ; but he very much regretted that he had so little time to answer each question, he would, nevertheless, do his best to reply to the principal points mentioned. He must accord to Dr. Buxton his thanks not only for honouring the meeting with his presence, but also for answering in his remarks several questions which had arisen. Mr. Halliday he would advise to take a little gas once or twice, then repeat his statement if his experience justified it. Mr. Mellersh and Mr. Dodd would pardon him only dealing with the administration of Nitrous Oxide, which in itself was so large a subject, in fact, as first written his paper took him over an hour to read, he was, therefore, compelled to cut out many points in order to complete his task within the prescribed time. Mr. Dodd also, as a member of the junior staff of the Dental Hospital of London, should be severely criticized for advocating performance of the two two offices in one, anæsthetist and operator. He was sorry that he had failed to understand Mr. Austin's question. He then informed Mr. Seymour that the apparatus (lent by Messrs. Ash) would be again on view after the discussion. Dr. Dudley Buxton was, he thought, flattering in his criticism. It was impossible, however, to refrain from thinking that he attempted to "cavil at the ninth part of a hair," as far as his remarks on "dieting" a patient were concerned. He did not understand Dr. Dudley Buxton when he deprecated the use of a small quantity of brandy as a stimulant for very feeble patients, when he had only just mentioned that syncope was the greatest danger and obstacle to be overcome by anæsthetics. The patients he referred to as rheumatic gave no history of rheumatic fever, but only of rheumatic pains. Mr. Love, he said, must have paid very little attention to the words of his paper, for he only called attention to one of the uses of the "mouth prop" which was frequently overlooked, but did not say that that function was the only one it had. In fact, he distinctly stated the reverse. Mr. Love, like Mr. Nicol, seemed to forget the objection to the "supplemental bag" which he mentioned, that with its use the patient reinspired his own carbonic acid. Mr. Whittington, after detailing the reason why anæsthesia was prolonged by the administration judiciously of an occasional breath of air, said that he felt constrained to again thank those present for the really kind and hearty way they had received his paper.

Messrs. Parris and Love then drew attention to the very irregular way in which Casual Communication specimens, and the attendance book were circulated and filled in; and the Chair hoped that in future this irregularity would not be so.

The PRESIDENT then gave his inaugural address.

The PRESIDENT proposed a vote of thanks to Mr. Whittington for his paper; to the gentlemen who had brought forward casual communications, and to Dr. Dudley Buxton for his kind assistance in the discussion.

Notice was then given that the next meeting would be held on March 13th, when Mr. Halliday would read a paper on the "Manipulation of Filling Materials." The proceedings then terminated.

THE DENTAL RECORD, LONDON: APRIL 1, 1893.

THE "POETRY OF THE WAITING ROOM."

We have published a shrewd if somewhat prolix letter upon this subject by a correspondent, because it touches a really practical and interesting subject. It is a healthy and useful thing also, for us to see ourselves as others see us, especially when "the others" are critics from outside the profession. There is much that is exaggerated in our correspondent's views and not a little which suggests having been written for the sake of "tall talking," but nevertheless there is a substratum of truth in the remarks which find expression in the letter. The sanitary view of the waiting room, the heating, ventilation, lighting, protecting from sun, the provision against draughts, are all aspects too frequently ignored; while serious insanitary conditions such as the discharge of sewer gas from lavatories, W.C.'s, untrapped pipes, defective drains running through the area over which the room looks are sometimes entirely overlooked, since the waiting room is often not used by the family except at meal times, when the savoury odours of "baked meals or kippers" cover the aroma of sewer gas. The heated room too often sucks up the sewer gas when an improperly disconnected discharge pipe exists in an adjoining lavatory and this danger can certainly be guarded against, even although we may not be prepared to sacrifice the drawing room for the purpose of receiving patients. The children who come to the dentist are not always too orderly, and we imagine that most dentists would think twice before receiving these little visitors in rooms fitted according to modern ideas of the drawing room. If we understand our correspondent to mean merely the replacement of the conventional dining room table, which is out of place in a waiting room, by divans and chairs we agree in theory, although in practise it will be found that there are not usually many persons waiting in the dental anteroom. Probably a really useful innovation which we believe is largely practised in

America might be more commonly adopted here, and that is the intervention of an attendant or secretary of some kind, who should prepare the patient before he or she enters the dentist's room, and arrange succeeding appointment, answer questions about fees, or even perhaps arrange such business details entirely. How far the English feeling would permit of this system being carried out in its entirety, it is impossible to say, but it would be a great boon to dentists if their time and attention to detail could be spared.

Our correspondent's remarks upon the literature of the waiting room table are humourous, and we fear are not very wide of the mark. It is a curious fact that in so few rooms used for waiting in, is there a book shelf or book table. The newspaper is as a rule read before the patient arrives, and the weeklies are so soon out of date that unless a fresh periodical is bought day by day—an expense which hardly seems desirable or expedient—there is usually "nothing to read." When the dental elysium arrives and we all have too much money to know quite how to expend, there will be many suggestions about the business plan of the dentist's house which can be discussed. Thus, after the "drawing room" and the one or two smaller rooms adjoining, there should certainly be another room where patients could go to and recover quietly after an anæsthetic! Then a picture gallery, a terrace with a fountain, and so on and so on, would bring the ideal dentist's suite of apartments quite "up to date"! *Badinage* aside, there is much of common sense and some truth in our correspondent's letter, and we hope our readers will take it for what it is worth, and if their conscience is not wholly easy, that they will literally set "their house in order" and remedy sins of commission as much as negligences of omission.

APPOINTMENT.

Thos. E. Constant, L.R.C.P., Lond., M.R.C.S., L.D.S. Eng., appointed Consulting Dental Surgeon to the Royal Northern Sea Bathing Infirmary, Scarborough.

Mr. Harold Stoner, L.D.S., Eng., has been appointed Assistant Dental Surgeon to Guy's Hospital.

Selections.

ASEPSIS AND ANTISEPSIS IN PRACTICE.

By W. D. Miller, M.D., D.D.S., Berlin.

In the *Dental Cosmos* for 1891, p. 514 *et seq.*, I published the results of experiments on the sterilization of dental and surgical instruments, which showed that the methods commonly in use are totally inadequate to the purpose. Since that time I have been occasionally asked whether I carry out in practice the measures recommended in the article referred to, and if it does not entail a great sacrifice in time and labour to do so.

It is the object of this communication to show that the methods suggested may be carried out in daily practice with perfect ease. I need not again point out here the desirability—in fact, the necessity—of the strictest aseptic and antiseptic precautions in operations upon the mouth. There may still be dental surgeons who know little and care less about asepsis and antisepsis, and who maintain that they can do just as good work with soiled hands and instruments as with clean ones; the public, however, is becoming too well enlightened on this point to tolerate them.

The Cleansing of the Hands.

It is well known to be an exceedingly difficult matter to completely free the hands from living bacteria. Fürbringer's method,* which places particular stress upon the sterilization of the subungual space, requires: (1) Dry cleansing of the nails from visible dirt; (2) brushing the hands, particularly the nails, for one minute with soap and warm water; (3) washing for one minute in alcohol, not under eighty per cent.; (4) thoroughly brushing for one minute in a 0.2 per cent. solution of sublimate, or 3 per cent. solution of carbolic acid. This operation requires about ten minutes, unless everything is placed in readiness by an assistant; in this case it may be gone through with in somewhat less time. Kelly † scrubs the hands and forearms with sterile brushes for ten minutes with olein

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* Fürbringer, P., "Untersuchungen und Varschriften über die Desinfection der Hände des Arztes, nebst Bemerkungen über den bacteriologischen Character des Nagelschmutzes." Wiesbaden, 1888, Bergmann.

† "Gynecological Technique." *The New York Journal of Gynecology and Obstetrics*, July, 1892.

(common brown kitchen soap) and hot water, the nails with especial care. They are then immersed in a saturated solution of permanganate of potash, and transferred at once to a hot saturated solution of oxalic acid. Finally the hands are rinced in sterilized water. This operation requires about fifteen minutes.

The question has been asked, whether absolute sterility of the hands is necessary on the part of the dentist. It is reasoned that inasmuch as the human mouth, even when well cared for, contains enormous numbers of micro-organisms, the introduction of a comparatively insignificant number on the fingers would probably result in no difference whatever in the general condition of the mouth· Furthermore, the fingers of the dentist do not come into contact with tissues which are very susceptible to infectious agents ; consequently hands that would be fatal to the success of a surgical operation may be introduced into the mouth without any ill results whatever. These conclusions should be accepted only with considerable restrictions, and only with the understanding that the hands do not carry any specific germs, and do not introduce into the mouth any pathogenic micro-organisms not already there.

I have adopted in practise the following mode of precedure :

Before beginning my work in the morning I cleanse my nails which are not allowed to become over a mm. long, with a penknife, and then brush the hands, giving, of course, particular attention to the nails, for two minutes with a rather stiff brush, in a warm one to two per cent. solution of lysol. Lysol is quite equal, if not slightly superior, to carbolic acid as an antiseptic, and is far less escharotic. It makes a soapy solution, and cleanses the hands beautifully even without soap, though I usually add soap as a matter of habit as well as to make the cleansing doubly sure. The hands are then rinsed in hydrant water and thoroughly dried. The whole operation requires about four minutes. The hands are perfectly clean, but of course not absolutely free from germs. If the finger are rough or cracked, or the nails long, double the time will be requisite to accomplish the same end. A slight odour of lysol clings to the fingers, but I have not found it disagreeable to the patients ; on the contrary, they are glad to be reminded of the fact that the dentist takes proper care of his hands.

Between the operations or consultations I wash the hands in soap-water, brushing the nails and fingers for half a minute to a minute.

If, however, I have performed an operation upon a filthy mouth, I return to the lysol solution, even increasing its strength according to indication to two and one-half, three, and even four per cent.

I do not knowingly, under any consideration, take on syphilitic patients during my regular hours of practice. If I am obliged to operate for such a patient I give an appointment at the close of the day, when there is ample time to disinfect hands, instruments, &c. If, however, the discovery is not made until the operation is begun, then it is as well to finish it at once ; but in this case an *absolute* sterilization of the hands is called for, either by Fürbringer's or Kelly's method, expect that in the former I should recommend lysol instead of carbolic acid, and treat the hands at each step two minutes instead of one.

It may be remarked in this connection that when the hands have been cleansed they should not be contaminated by contact with infected objects before or during the operation. It is not permissible to handle money or old teeth, or to dive down into the trousers pocket for a jack-knife, nor do I consider it quite proper to hold instruments at the back of the ear or between the teeth.

Sterilization of Instruments.

In regard to instruments, particularly forceps and excavators, I hold that absolute sterilization should be demanded, inasmuch as infectious matter is much more readily communicated by them through wounds than by the fingers, and further because the sterilization is so easily accomplished that there is no excuse whatever for our neglecting it.

The method of sterilizing instruments now most commonly in use is by means of boiling water containing one or two per cent. of carbonate of soda to prevent rusting. Three minutes for excavators and five for forceps will be sufficient, unless the instruments are covered with a thick, dry coat of infectious matter,—a condition of things not supposed to exist nowadays in a dental instrumentarium.

Various apparatus have been devised for carrying out the boiling process, some of them, I think, unnecessarily complicated. I have devised a very simple boiling-pan, consisting of a metallic box three inches wide, six inches long, and one and one-quarter inches deep, with a partition wall in the middle parallel to its length, and a rim at the top one and one-half inches wide, making an angle of about one hundred and thirty degrees with the side of the vessel. In this apparatus the hot water does not come into contact with the handles of the instruments, which in many cases would be injured thereby. Fine-edged surgical instruments are said to suffer in the course of time from boiling (become blunt), but this objection can hardly apply to dental instruments. Personally, I have adopted another method of sterilizing instruments. My chief reason is the fact that even a very little boiling in a dental office is sufficient, in summer, to perceptibly raise the temperature of the room, and I have no room adjoining where the boiling might be done. I have found that a four to five per cent. solution of carbolic acid, lysol, or trichlorphenol suffices to completely sterilize mechanically clean instruments in thirty minutes.

I keep two complete sets of instruments constantly in use, and as soon as I have finished operating for one patient the whole set of instruments used is removed from the operating-table and placed in the antiseptic solution, where it is allowed to remain while the other set is in use, or at least half an hour.

I do not only consider it necessary that every patient should have a fresh set of perfectly sterilized instruments, so that germs of disease may in no case be communicated from one person to another, but I hold that while operating for any one patient, the instruments should be kept in a clean if not sterile condition. I should, for example, consider it dangerous to wound the mucous membrane with an instrument just employed on infected tissue; consequently instruments which become strongly infected (burs used in opening up putrid pulp-chambers, etc.) should at once be dropped into the antiseptic, and all instruments which become soiled with blood or mucus should be thoroughly cleansed before being used again, even for the same patient. All this is done by the office-girl, who is indispensable for keeping the instruments in a proper condition.

For about a year and a half I used a four to five per cent. solution of carbolic acid, to which one-half or three-quarter per cent. of carbonate of soda was added to avoid rusting. I designate this small quantity because it is just sufficient, and a larger per cent. I have found by experiment to lower the antiseptic power of the carbolic acid.

Since about four weeks I have substituted lysol for carbolic acid since it is not necessary to add the soda to prevent rusting. It is also cheaper than the carbolic acid. All instruments, including, of course, corundum discs, files, and clamps, are subjected to this treatment, whereas those instruments which do not come into contact with the mucous membrane, or do not become soiled in the mouth (gold pluggers, etc.), are only occasionally sterilized.

Mouth-mirrors require extra care, and must be carefully brushed before treating with the lysol solution, in order to remove small particles of infectious matter which may have inserted themselves between the glass and the fastening. I keep so many mirrors on hand that I do not require to use any one twice on the same day. There is consequently no time lost between patients in cleansing mirrors.

DRINKING-GLASSES.

In order to be able to place before every patient a glass which at least does not carry any germs from the mouth of a previous patient, I have provided as many glasses as I have patients in a day. These are all placed in a three per cent. solution of lysol in the evening, and remain there for over twelve hours. They are then thoroughly rinsed in hydrant water.

I never use a piece of rubber-dam more than once under any circumstances. If I were to use the same piece repeatedly, I would sterilize it by boiling for ten minutes in the soda solution.

In regard to the sterilization of napkins, teeth for transplantation and implantation, etc., I have nothing to add to what I have already said in the article before referred to.—*Dental Cosmos.*

REVIEW.

METHODS OF FILLING TEETH.—By Rodrigues Ottolengui, M.D.S. S. S. White Manufacturing Co., Philadelphia.

This is not a dispassionate academic treatise, in which every possible aspect of the subject handled is set forth in all its bearings. But every page bears the marks of having been written by a practical man, and, what is more, by a man who possesses in a marked degree the power of conveying his knowledge and his ways of applying it, in clear direct language. Many operators there may be who are as skilful and as conscientious as the writer of this book. There are but few who are gifted with an equal power of teaching; and fewer still who, possessing such power, find time and inclination to excercise it. We welcome, in proportion to their rarity, such books as the one before us, in which we find an unusual combination of knowledge and skill, experience and enthusiasm, sincerity and lucidity. And all this we can freely say, although we by no means agree with the author in every position he holds,—notably in what he says about non-cohesive gold. Though disagreeing entirely with his conclusion that the use of non-cohesive gold can quite well be dispensed with, and joining issue as we do with the writer on various minor points, we are, nevertheless, deeply impressed by the value of the work. It is written in terse language, crisp without being unintelligibly condensed, and sufficiently full without being circumlocutory, and no reader can fail to be struck by the original and suggestive style. A written description of such work as that involved in filling teeth, must of necessity—to be of real value—enter into minute details ; to do this clearly and forcibly and without wearisome repetition, is not an easy task, but Dr. Ottolengui has accomplished it. His style is admirably suited to his subject, and carries the reader along with a sense of real pleasure. Dogmatic, too dogmatic, are some of the sentences, no doubt, but this is a small fault, one may almost condone it as a virtue, when one thinks of the cautious generalisations, the inept platitudes, and the cumbrous compilations, which, while safe in their vagueness, and all-embracing in their range, are of little use as far as practical instruction goes. In giving some idea of the contents of the book, we may say that the author is at his best in dealing with what is of fundamental importance, namely, the preparation of cavities. "When a cavity has been properly prepared, the tooth is half filled. The most beautifully polished, solid, well-formed filling will fail if the cavity has not been skilfully shaped." With these words the first section of the volume begins, and the subsequent directions are sound and explicit. The proper treatment of enamel edges, the fault of leaving enamel unsupported by dentine except where it is absolutely unavoidable, the shaping of the cavity "so that the filling cannot be dislodged mechanically after it has been inserted," the necessity of sufficiently enlarging the openings of concealed cavities, and the mistake it is to trust too much to the engine-bur,—all these points are fully dealt with, and with reference to the last two, a couple of sentences may well be quoted, since they afford a good example of the writer's direct and sensible style. "It is frequently impossible," he says, "to detect all the ramifications of decay with an engine-bur, partly because the rapid motion destroys the keen sense of touch, and more often because the position of the cavity is such that the shank of the instrument limits the territory which can be reached. All cavities should be scraped with spoon excavators, and all undercuts explored with a right-angled hatchet. For this reason, all crown cavities should be opened sufficiently to permit the use of hand instruments." On another page we have it stated that, properly to prepare a cavity "sometimes taxes the utmost ingenuity of the most experienced, so that binding rules cannot be formulated to cover all conditions." But if we are not, as indeed we cannot be, provided with hard and fast rules, we find a better provision in the full and careful directions given for the treatment of almost every conceivable kind of cavity, and the conciseness and clearness with which each step is set forth, are as delightful as they are unusual. A very useful chapter is that containing various methods for the exclusion of moisture from cavities. It is true, we are surprised here to find no mention of the saliva ejector,—that appliance for which, in our experience at least, patients so continually express their gratitude; but with this notable exception, the directions given and the methods detailed are excellent if not exhaustive, and cannot fail to be of great service to many. The sweeping condemnation of matrices, to be found at the end of this chapter, we cannot endorse. Like all good things, the matrix is doubtless liable to grave abuse, but wisely used, it holds an important place amongst our appliances. No book that we have yet seen approaches this one in value as a manual for teaching the use of cohesive gold, for showing how difficulties in its application may be met, and for innumerable suggestions as to the best way of dealing with special conditions. In this latter direction especially, Dr. Ottolengui excels. He is constantly pointing out the right road to take under special circumstances, constantly pointing out the pitfalls that await the unwary, constantly warning against mistaken methods which, but for such warnings, might be blindly adopted and even persistently used by the average man not gifted with the quickness of perception and the eminently practical spirit of the writer. Tin and gold in combination are dismissed in a few contemptuous words unworthy of the author, and carrying little weight, since he admits that he has never even tried the method. In the same way, though with rather less disrespect for the opinions of others, non-cohesive gold is rejected by the author who has "never used it." Again and again, in the pages devoted to cohesive gold, the danger of leakage, with subsequent imperfection of fillings at the cervical edge, is dwelt upon; again and again the reader is put on his guard against the dangerous tendency of cohesive gold to ‘roll’ and ‘ball up’; again and again we are reminded of the difficulty there often is in obtaining good cohesion throughout the whole of a filling,—and yet the writer has "never seen any need" of non-cohesive gold! We hold, it is indeed a truism, that cohesive gold is most valuable, and for many purposes, especially contour work, unapproachable; but we also hold that non-cohesive gold, rarely alone, constantly in combination with cohesive, also holds a place that no other material can fill so well. And, therefore, we cannot but look upon the exclusion from this book of any teaching concerning non-cohesive gold as a great defect. The comparative merits of contour and flat fillings are considered, very fairly on the whole, although more might advisedly have been said about the special circumstances under which flat fillings are to be preferred. There is a very good section devoted to amalgam fillings, and a method is described of finishing such fillings with gold foil which we do not remember to have met with before. Carefully weighed, and at some length, is the question as to when amalgam should be used in preference to gold, in those cases where there are good arguments on both sides. Oxy-phosphate is mentioned as a filling material having "many uses," and one of these—namely its use as an anchorage for gold, is dwelt upon in detail. It is only to be regretted that there is not a more distinct warning given against the injury to the dental pulp, which, unless protection is afforded, may accrue from the caustic property of the phosphoric acid used in the filling. And apropos of this, we may remark that the author seems to be unaware of the valuable pulp protector that we possess in oxy-sulphate of zinc. The remarks dealing with what the writer speaks of as "green-stain" are useful and suggestive; and the passage on erosion is very sensible, great care being taken to discriminate between the varying conditions met with, and between the forms of treatment that such conditions respectively demand, whether the use of the burnisher, the application of silver nitrate, or the insertion of a filling. Admirable is the way in which the necessity of thoroughness in the treatment of roots is inculcated, whilst at the same are well described. The conditions which render it impossible to deal with every case in identically the same way. "Extremists," says Dr. Ottolengui, "are not good teachers. The man who reams out every canal to its apex is as unworthy of a following as the other man who can fill all canals without having a reamer in his office," One of the many useful suggestions scattered broadcast through the book, is the author's method of filling roots with cones of silk and gutta-percha. We confess that we should have liked to see the paragraph on "abscessed teeth" amplified, and some statement made as to the results obtained from the surgical treatment so briefly indicated. In conclusion, we must say that the English used is for the most part excellent, except when the writer in a very few places indulges in such objectionable Americanisms as "salvable," and "abovt the disease." The illustrations are exceedingly good, original, highly descriptive and adding largely to the value of the text. To read a book like this, written by a man who knows his subject and who takes pleasure in his work—his greatest pleasure being to do his work *well*,—to read such a book is not only to be taught many a thing that is new; it is also to be stirred and braced as if by a tonic in one's own endeavours to do good work. The author has his hobbies and rides them hard enough, we are bound to say—too hard perhaps to allow of one's putting the book unreservedly into the hands of students. But there is such a preponderance of sound common sense, and the pages are so pervaded by a feeling of the essential importance of thoroughness and sincerity in dental work, that one forgives the hobbies for the sake of the excellent tone of the rest. Last, but not least, a most pleasant feature in the work is this, that whilst throughout it holds up and strenuously teaches a high standard of operative skill,—it teaches also consideration for the patient, showing by many a hint how to do the best work with a minimum of pain.

Journalistic Memorabilia.

CAMPHOID.—Camphor, twenty parts; alcohol, twenty parts; pyroxylin, one part. A good protective.

Items of Interest reports yet another death from Cocaine. A man forty-four years of age died at Bellevue Hospital, July 20th, after an injection of cocaine given before a painful operation. The autopsy showed that all internal organs were congested, which led to the belief that death was due to cocaine. This is the first case of the kind in this city.

MORE ABOUT COCAINE.—James Miller and Julius Fay, of Paris, have been fined for injecting cocaine into a patient's jaw, without being licensed so to do. Both are reported to be Englishmen possessing registrable qualifications in France.

An alloy of ninety-five parts of tin and five parts of copper will connect metals with glass with great tenacity. By adding from one-half to one per cent. of lead or zinc, the alloy may be rendered softer or harder as required. To prepare the alloy, pour the copper into the molten tin, stirring with a wooden mixer, and afterward smelting. The *Pharmaceutical Record* says that this alloy is also good for coating metals, imparting to them a silvery appearance.

The Administration of Pure Oxygen.—Adverting to the employment of oxygen for the limelight and other purposes, Mr. T. C. Hepworth points out that the success of this comparatively new industry (the separation of oxygen from the air) has been so marked that, as a natural result, competitors with rival processes have come forward. But, according to his experience, the rival product turns out oftentimes to be not oxygen, but a half and half mixture of oxygen and air, with a slight excess of the latter. He recently obtained, for instance, a sample of gas from a dealer, which on testing (with a Hempel absorption pipette charged with metallic copper and ammonia) was found to be a mixture containing only 60·6 per cent. of oxygen. He next tested the illuminating power of this highly diluted oxygen with a limelight jet, and for sake of comparison placed by its side a precisely similar jet supplied with Brin's oxygen, and as might have been expected, the light given by the former was little more than half as intense as that afforded by the latter. With the good oxygen the lime cylinder was quickly pitted, whilst the other showed no symptom of destruction. It is also to be remarked, he says, that the consumption of the diluted gas is, for a given period, about one-third more—striving with both jets to get the best possible light—than that of good oxygen. On the same principle, a mountaineer at a high altitude will pass a greater volume of air through his lungs in a given time than he will when he is in the valley breathing that which contains the normal quantity of oxygen. He concludes that this matter is of great importance to many workers, and might be one almost of life and death in the case of a patient for whom inhalation of oxygen had been prescribed. The importance of this caution cannot be too much insisted upon, when it is remembered how frequently now-a-days oxygen or reputed oxygen is used in a mixture with nitrous oxide as an anæsthetic.

A REMEDY FOR THE AFTER-PAINS OF TEETH-EXTRACTION.—A potent and reliable remedy for the immediate after-pains of teeth-extraction ; whether general or local anæthetics are used or not, is amyl nitrite. The patient to inhale the preparation about three or four seconds, and then to *sit still* in the chair for about five minutes, or until the amyl nitrite has spent its primary force. As a matter of fact, the remedy should be kept in every office, dental and medical, where anæthetics are used. A single drop of nitro-glycerin, one per cent. solution, *in half a glass of cold water*, is even better than amyl nitrite, and more lasting in its effects. Both remedies are of marvellous benefit in neuralgias of all kinds, and both will oftentimes *cure* the bad headache following dental operations. In angina pectoris, one of the most dreadful of all cardiac affections, nitro-glycerin is almost a specific, so far as relief of pain is concerned, although not curative of the frightful malady. Intense fear such as is exhibited by nervous patients in visiting a dentist for tooth-extraction, will sometimes bring on an attack of angina pectoris in patients with weak hearts; hence it behoves the dental surgeon in full practice to be prepared for emergencies of all kinds, and to be able to cope with them successfully when he meets them.

THE AUTOMATIC MALLET.—Articles have from time to time appeared in the *Dental Cosmos* either lauding or depreciating the automatic mallet. From an unbiased standpoint, as I have seen the workings of the hand-mallet and have practiced with the automatic and electric mallets, I am led to advocate the use of the automatic. I have found, so far as my personal experience and observation go, that those who array themselves most formidably against the automatic mallet have been dentists who fail to carry out the fine details in its working, which, if properly observed, are destined to fulfil the highest requirements. In other words, they lack that peculiar ability to overcome its objections ; and that there are objections to the automatic mallet I do not deny. I have seen more failures with the hand-mallet than with any other mallet. I recognize this to be a very broad assertion, but I do not say that good fillings cannot be introduced by means of the hand-mallet, for I have seen some excellent cases from a few skilful dentists by means of that instrument; but the very fact that fillings can be more easily inserted with the hand-mallet, and with less skilful care than with the other methods, tends to make dentists less skilful, less observant of details, or, in fact, very careless. Entirely too many dentists employ the foot-plugger point too early in the operation. I believe this to be a great feature in the failure of fillings, and a failure which can best be rectified and overcome by the professors and demonstrators who superintend the dental college clinics. The fault with the foot-plugger point is that the operator employing it quickly recognises that it shortens the work, which is always an advantage when properly done; but to shorten the work with a foot-plugger point too early in the operation is a grievous mistake, as one is apt to run over enamel-margins too soon, or leave pits and imperfections in the filling. Again, the foot-plugger covers considerable ground, and no instrument will throw a filling out of position so readily as the foot-shaped points of the automatic mallet, because of their many shapes and because of the inability of the operator to calculate exactly at what point the force will land (which can always be easily calculated by using a small round point) ; hence the force will often dislodge the filling unless it be previously well anchored and wedged by careful attention to every detail of the operation. Now, it is a recognised fact that one cannot so readily employ the foot-plugger point in the automatic as in the hand-mallet, as more precision and more correct handling is required ? hence the objection to the automatic mallet. The greatest objection to the automatic mallet appears, however, to be the liability of fracturing the enamel-wall or chipping the enamel-margins. The liability to do this with the automatic-mallet, if in the hands of a skilful dentist, is not greater than with the hand-mallet, but it does occur very often to those who have practiced with the hand-mallet and have attempted to use the automatic, even to those who have first made themselves skilful in the handling of the automatic. In employing the automatic-mallet it is necessary to start the filling with hand-pressure, carefully applied so that the retaining-pit or groove and undercut are packed tight ; then at the proper time apply the automatic, using at first a light blow, then medium, and resorting to hand-pressure for all deep undercuts, especially those in approximal cavities in front teeth, and, above all, being careful not to mallet directly against the enamel-margin, but always letting a pellet of gold precede the fine plugging-point ; which pellet of gold should be malleted against the preceding piece or pieces, until the filling is flush with the margins of the cavity. Then the gold should be run over the enamel-margin by malleting on additional pieces, in such a manner that the gold will run over the enamel margin without depending upon enamel for support. In that case, when the filling is dressed down, there will be a thin film of gold over the margin, so that neither an exploring-needle nor fluids can get between the filling and the margin. When the cook wants to prevent the juice from getting between the dough and the pie-pan, she presses the dough against and slightly over the edge of the pan. Fillings introduced by the hand-mallet will not resist the sand-paper discs, gold finishing-burs, and finishing-files as well as those introduced with the automatic, and are more liable to chip flake by flake. This has been not only my observation, but that of many. In the Snow & Lewis single-action automatic plugger, the operator can employ the double, long, powerful blow produced by revolving the ring on the barrel to the right, which to my mind is cruel, dangerous, and unscientific. It is my pleasure to state that patients who have experienced the use of the hand-mallet always express themselves highly in favour of the automatic, claiming that it produces less pain and less jarring of the teeth and head. Having the left hand free, one can, if necessary, support the chin, teeth, or head, and reflect light into the cavity by aid of the mirror, always independent of an assistant. I believe in all methods being taught, for we always find those who are more skilful in the use of some one of the various methods, and I believe in him following the method in which he finds himself the most skilful; but I do not believe teachers in dental colleges should uphold the use of the hand-mallet, for example, and depreciate the automatic, simply because they personally happen to follow the former method, and this seems to be the case in many colleges.—A. BUXBAUM, *Dental Cosmos.*

A NEW MEANS OF MOUTH-LIGHTING.—The help afforded to a successful diagnosis by means of a powerful and convenient form of incandescent lamp, and the benefits derived therefrom, have been unappreciated in the past; and considering the rapid advance made by the dental profession in the line of appliances, it seems all the more remarkable that up to the present time we have been satisfied with the somewhat cumbrous and inefficient means of lighting so far given.

The medical profession is ahead of us in this respect. It has caused the electric companies to manufacture all kinds of useful lamps, and it is due to that profession that we enjoy that which I consider to be a great privilege, the use of the lamp to which I wish to call attention. It was made for surgical use in inter-uterine work, and consists of a glass tube, seven inches long and three-eights of an inch in diameter, the light end being rounded and slightly constricted, forming a neck, the other end being covered with hard rubber for the space of an inch or so, into which the wires pass.

The light given by the dentoscopes we have, never exceeds in illuminating power that of one-half candle power ; in connection with this a mirror is so placed as to admit of but little degree of variation in reflecting the light. These are drawbacks to much efficiency in their use.

The intra-uterine lamp if made to give six-candle power (twelve times the light given by the others), with but six volts, the current obtainable from a storage battery of three cells or from a Partz acid gravity battery of six cells, and is most convenient in size and shape, and free from any mirror attachment. This is a decided advantage, for it can be carried to any point within the mouth, and with the mirror in the other hand its rays can be thrown in any direction. These lamps are used for inspection only, as the heat evolved precludes their use any great length of time in the mouth.

The light being more intense, as has been shown, vastly extends the field of its usefulness ; by its use the differentiation of vital from devitalized teeth, not always an easy matter, becomes sure in its accomplishment ; a hidden cavity, no matter how small, is demonstrated ; the minute unevenness in cavity-edges when prepared for the gold is all too plainly apparent ; the line of approach of pulp-chamber to cutting edge, the knowledge of which is so important at times, is shown ; the doubt as to enamel being checked or cracked is cleared up ; and many other uses I need not mention are subserved.

The lamp is not costly ; the sum of four dollars and fifty cents covers its purchase.

It can be hung near to or from the bracket, with a push button set by the chair in easy reach of the operator's foot, and the connection so made.

A resistance coil is a necessity, for the voltage may at times be too great for the safety of the lamp, and by this the current is regulated in accordance with the need as indicated by the voltameter, or, as the operator becomes proficient, as indicated by the color of the light. This is a small matter as far as work is concerned however, for occasion to regulate may not be had once in a month, the state of the weather, dry or damp, having to do with this.

The life of the lamp is from seven hundred and fifty to one thousand ampere hours. I believe it to be a great aid to accuracy in our work, and take pleasure in calling the attention of the profession to it.—W. B. Sherman, D.D.S., *Dental Cosmos.*

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

To the Editor of the Dental Record.

THE "POETRY OF THE WAITING ROOM."

Sir,

I have had a somewhat extensive experience of waiting rooms, and happening upon your paper, 'valuable journal,' I believe is the correct phrase, in one of these, the idea occurred to me to write to you my impressions, good, bad, and indifferent. I could " a tale unfold" concerning door openers—the pampered menial who is sonorously called the butler, but who, I am credibly informed, comes with the milk and retires with the last appointment—is one study worthy of a more gifted pen than mine. Again, the " perfected parlour-maid," sometimes so superior that her condescension in opening the door is evident ; sometimes affable, even effusive, sometimes sad to the pitch of hopelessness, each deserves careful portraiture, but must be passed by as merely accessories before the fact, viz., the waiting room. In size, waiting rooms vary between a snug room with a cat on the hearth-rug and a canary at the window, and those vast places which suggest the palaces of days gone by, adorned with ceilings of artistic merit. The snug rooms are very well in theory, but very stuffy in practice. One I was, alas ! too well acquainted with, was rendered (?) amusing by a stereoscopic arrangement with a number of views, very old and very dirty. These were seized on by children—some children were always in that room, and made day hideous for me while intent upon last week's Punch. Another room I know is very large and very fine, but oh, so dark ! " Relinquish Hope all ye who enter here," might well be emblazoned over the lintel of that room. All who do enter, and they are a goodly crowd, speak with bated breath and move ghostlike when summoned to their doom by the winsome maiden who officiates as janatrix to the establishment. Yet another vision of a waiting room, also what our Teutonic neighbours would term " Colossal, " with an accent on the third syllable please !—is the *ne plus ultra* of dreariness. Its furnishing is handsome, its walls most artistic, but its literature conspicuous for its slenderness. One gets tired of reading the Medical Directory, and even prehistoric volumes of magazines pall on the sexagenarian. This room, however, is far better than another I used to frequent with a young friend whom I had to chaperone. The presiding genius of the place was a particularly nice man, a gentleman, and by no means devoid of education or taste, but his table was most bucolic. I mean the literature was rustic, the Farmer's this, and the Countryman's that, pigs, fat heifers, sporting dogs, and beasts of that ilk. But, Mr. Editor, if you will forgive the garrulity which is commonly condoned in my case, I will add a few of what are real grievances about your waiting rooms. One can take a book, or even a newspaper if one is tired of the omnipresent " Morning Post, " a paper which is I know *de rigueur*, if a trifle dull, but other ills one cannot prevent. Of these, first comes the shocking closeness, stuffiness of your rooms. There is too often a suspicion of yesterday's dinner and to-day's luncheon, that cheroot (I detest fresh and loathe stale tobacco) still lingers like a horrid dream, and all the stuff of the chairs exhale peculiar idiosyncratic odours into the overheated atmosphere. I know patients are to blame, I have myself had more than one skirmish with over-clothed old ladies who have insisted in having windows, ventilators and doors shut, but if the room is well opened up night and morning, and the fire is kept well alight, no malodour need exist. Again, the absence of a withdrawing room for ladies and children is a great inconvenience. However free from the vice of vanity a woman may be, she does not like to perform her toilet in the dentist's room and still less in the waiting room, to be the " synosure of all eyes." The profession of dentistry has so altered since my young days, and its exponents are so altered too, and those in the " upper branch, " as Mr. Besant would say, are so uniformly nice and kind, that I feel sure they will forgive me for these strictures, and permit me to say that if they would furnish their waiting rooms like (with-) " drawing " rooms, not with gimcracks by any means, and have one or two small rooms with lavatories, they would confer a great favour upon the whole class of which I am one.

A PATIENT.

THE DENTAL RECORD.

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Original Communications.

ON SOME WAYS OF MANIPULATING THE FILLING MATERIALS.

By Mr. HALLIDAY.

Mr. PRESIDENT AND GENTLEMEN.—When I decided to write a paper on this subject, I did not anticipate the task I had set myself. The subject is about the most interesting for us all that we can have, and once having started on it, it is difficult to stop. As a matter of fact, a separate paper could well have been written on any and each one of the divisions alone, but I found that out too late. I must therefore ask you to be patient with me through a long paper, the statements made by one authority being contradicted often by another, and I have often put in both so that you may signify in the discussion the method you consider the best.

GOLD.

Non-cohesive gold is retained in position by mutual interlocking of the pieces composing the plug as well as keyed in by last portions introduced. It may be used in the form of cylinders, rope or tape. If cylinders are used they are packed like cigars in a tumbler, each cylinder standing on end in the cavity with the end projecting from cavity mouth. They are always compressed laterally against the walls, and as the cavity gets full well pressed into the undercuts. When nearly full, a sharp wedge-shaped instrument is introduced into the middle of the mass and worked sideways so as to leave an opening which should leave access to the bottom of the cavity. Into this opening another cylinder should be forced, even compressed by rolling in fingers before putting in. When the cavity will take no more cylinders, tape may be wedged in by these

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*A paper read before the Students' Society, Dental Hospital of London.

wedge-shaped instruments, and to finally finish, a piece of pointed wire may be driven in. When the cavity is thus full, the surface should be condensed by a broad-faced plugger, with a flat or convex end, and the whole gone over with a smaller sharp point, and any defective points rectified. Instead of wedging in non-cohesive foil, cohesive may be used which makes the surface of the filling harder than it otherwise would be. If rope is used the end or middle of the strip may be introduced into the cavity, and tucked against the wall, then folded, leaving some projecting from the surface, and placed against the last piece, folding so that all layers shall be fairly parallel at right angles to the floor of the cavity. It is condensed in the same way as cylinders. Tape may be used by cutting into strips of the width required and placing several cross ways in the form of a star, and placing this star on the floor of the cavity tucking into the undercuts. Several stars are then inserted in this way, and afterwards the ends are tucked in, not at the circumference, by a fine-pointed instrument. In whatever way tape is used for this, it consists entirely in placing the several pieces so that they may be interlaced by successive folding one piece on another. This form of gold filling when the cavity is full and the surface is condensed is cut down to the bite and burnished, for however well the fold may be condensed over the edges, burnishing will improve the edges; cavities are, therefore, more advantageous for this method if the edges are bevelled, so that the gold may be well burnished over them.

To obtain the best results with cohesive gold, it is necessary to pack it in small pieces. It may be used in the form of crystal and sponge gold and foil, this last being used either folded into tape, rolled into rope, or made into cylinders.

When used as tape, it is generally used with a mallet. The gold may be started by points, drilled in the dentine or having the floor entirely, or partly filled with cylinders, being filled with cylinders just enough to give a firm start for the mallet. This is less painful than starting points. When retaining points are used the gold should be packed in each, taking care to well condense it, a little above the floor of the cavity, a piece of tape is then worked on the first one, and then the other, making a bridge between them, on this more is built, carefully getting it into the undercuts, and over the cervical edge. This firm foundation may be made either by using the automatic mallet when the starting points are filled, or by hand pressure. It may then be continued either by hand pressure or by mallet. It is important in tape filling by the mallet that the tape be folded evenly, as, should it get crumpled up in a lump, it may not condense properly or not even cohere to the last layer if the foil is very heavy. If it goes down well under the plugger, all is right, the only thing then being that after the filling has been in a few months the surface will show spotty. The tape should be burnished over the edges by the plugger point.

Malleting should not be continued on any piece of gold till it gives a clear sound, it should always be a dull sound, for when you get a clear sound from the malleted gold it shows that the cohesion is getting impaired, and the gold become brittle and very liable to curl away from the edges. Gold for hand pressure may be either rope, tape or cylinder. The filling is started by taking a cylinder in the bottom of the cavity in one corner, and condensing it there, then holding it in position, another on the end of this, and then another, holding the enlarged mass till you have packed enough in the base of the cavity to stay in by itself. It may be started by taking a large cylinder, annealing it, and condensing at the ends first. If it is condensed in the middle before the ends are thoroughly condensed, it is pretty sure to curl up. The cavity should then be built up either with cylinders, added one by one, each being carefully condensed, or by tape, the end of the first piece being made to adhere to the cylinder mass by hand pressure and then condensed by the mallet. Cylinders, especially if at all large, should be condensed first at the ends, and the middle cast as if the middle is done first, in condensing the ends the whole piece is likely to tear away, as the gold has a great tendency to form into a ball under the plugger. Cylinders should always be laid sideways on one another so as to get the layers parallel, a better cohesion resulting in this way, and also giving a better face to the filling. A cylinder-built filling is as good as a tape, but does not give such a hard surface nor take such a high polish.

A good way to start a cavity when the cylinders give trouble, is by balling up, and also in cavities rather difficult of access is to take an unannealed cohesive cylinder and condense it in cavity, flooring the whole cavity with this, and then working annealed cylinders all round the edges of the cavity and well into all undercuts. This gives a nice firm floor. Cylinders do not need a heavy pressure, a slight pressure accompanied by a slight rocking motion of plugger is more efficient. Rope is a very good way of using gold by hand-pressure. A whole sheet is rolled up and cut into fair-sized pieces, and if the cavity is fairly accessible, a large foot-plugger may be used and the gold quickly massed in. This form has one good point—sometimes, when for some reason, the gold fails to stick, and neither tape nor cylinders go nicely, this form will cohere very well. Another good point is the very much lessened possibility of burning the gold in annealing. The only thing in packing gold this way is to be extra careful of the edges, for the gold packs so easily.

If cylinders are too much annealed, they are very likely to curl up, if not enough they may cohere, but the filling is not so solid.

Cohesive gold may be packed by nearly or quite smooth rounded pluggers in foil or cylinders.

With regard to plugger points. If they are serrated the teeth should be very fine. Some contend that such a perfect filling cannot be made with serrated points as with smooth ones, and that the balling up and curling away of gold from the edges is to be ascribed to the use of serrated pluggers, and that the face of the instrument must be smooth to allow of lateral expansion of foil. Dr. Thompson recommends all foil to be bought non-cohesive and annealed as wanted, as when annealed only once it is very cohesive and very soft. If annealed more than once it is also very hard and unruly.

Foil may be folded three or four or more times according to the liking of the operator, or rolling it into rope should be done in a napkin, as the moisture from the fingers is apt to spoil the surface of the gold. The gold may be crumpled by laying a sheet on a velvet covered pad, and drawing a similar pad lightly over it.

Many porous fillings are the result of too rapid packing and using too thick gold, and again, from too long continued malleting, which causes; gold to lose much of its cohesiveness; instead of packing dead against walls it is driven from them by the excessive vibratory motion which partially destroys the close contact obtained before. Light and prolonged tapping with small instruments will better unite the particles of the gold, and more readily adapt it to the cavity walls than a bigger instrument and a heavy blow. Delicate, light, and rapid manipulation is best. On the other hand, Dr. Leslie and others contend that as large a point as possible should be used, as few blows as possible used to condense it, and though small points must be used sometimes round the edges, large points will give better cohesion. He says, "The blacksmith uses a hammer with as large a face as possible when welding iron, and would laugh at any one who should tell him he would make a better weld the smaller the face of his hammer."

Crystal gold should be used in small pellets or strips, and pressed quite gently all over with a large pointed plugger so as to condense each individual pellet, then increase the pressure. After the foundation of the filling thus made, they should be condensed in the usual way with mallet or hand pressure. Do this with each pellet. If filled entirely with hand pressure, the last layer should be malleted and then burnished, as the burnisher spreads the gold well over the edges. Sponge gold should only be used with very firm cavity walls, and in very small pieces, as the pellets are liable to be condensed on the surface and not underneath, making a porous filling.

Cavities may be lined with non-cohesive gold by first placing a layer of non-cohesive gold at the cervical edge and covering it with cohesive, well filling in the corners. Then place a soft cylinder against one wall joining the first layer, and a cohesive one on the top, making it cohere to the first layer of cohesive. Keep on adding all round a soft cylinder against the wall and a cohesive one to keep it there, working each cohesive one into the last. When the whole of the cavity except the floor is filled, place a soft cylinder as large as possible on the floor, and condense lightly and cover with cohesive foil and work this on to the cohesive lining round and then finish with cohesive. By this means great pressure on foil walls is avoided. They may also be lined by folding soft foil into a heavy weight and laying against the walls and the floor and the cervical edge, tucking into the undercuts and fixing with cohesive, allowing the lining to project beyond all the edges till the cavity is quite filled in with cohesive.

When a filling has been started with non-cohesive and is to be finished with hard gold, in starting the hard gold, tape may be made to adhere fairly well to a soft gold if well worked into it by a serrated plugger, or cylinders may be condensed into corners and undercuts and held there, while more is added, till a firm base is made and it is then finished in the usual way.

Cavities may be started by putting a floor of osteo in the cavity, and before it is quite set embedding a condensed cylinder in it. When the osteo is properly set the mallet may used on it at once.

The Herbst method of packing soft gold by rotating burnishers is said to make a hard, solid, and more perfectly adapted filling with greater ease and in less time than in any other way. For this method there must be four walls to the cavity, either natural or made with a matrix. The cavity must be bigger inside than at the mouth, but not necessarily undercut, and no retaining points are used. The enamel edges must be square. The cavity is then loosely filled with large unannealed Wolrab's cylinders. A polished steel burnisher, pear-shaped, as large as the mouth of the cavity will permit, is introduced and slowly revolved by the engine, while by firm, steady pressure the gold is squeezed to the sides and edges of the cavity until it is thoroughly condensed and presents a highly-polished non-cohesive surface. A blunt-pointed instrument is then substituted for the pear-shaped burnisher, and the surface is prodded all over, the engine being rotated more rapidly and moderate pressure being used. The gold is thus still more thoroughly condensed, it loses its hard polished surface and becomes a hard solid mass of cohesive gold. This is repeated till the cavity is full, the matrix is removed, the filling cut down to the biteand polished. When the burnishers become coated with au, they shculd be cleaned on a piece of block tin or fine glass paper. If the instrument is kept too long in one place, a painful amount of heat is generated. The matrix should be well beyond margins of the cavity in every direction. In the front teeth the tooth to be operated on and the two or three adjoining should be embedded in shellac, with a platinum lining for a matrix. If two interstitial cavities are to be filled they may be filled together and afterwards separated by drilling, passing a needle several times through the filling and then using a saw.

If cohesiveness is temporarily lost a fine cut bur over the surface of the gold will restore cohesion, or going over the surface with a finely serrated plugger to remove the polished surface.

If the surface of a gold filling should become accidentally swamped during filling, dry as much as possible by ordinary means and then take a burnisher which has got gilded and rapidly rotate it for a short time over the filling, and sufficient heat will be generated to make it dry and cohesive. Very hard fillings can be made this way that will stand the ink test.

As changing the polishing bur for the dull blunt bur took up a lot of time, hand instruments with round polished heads are now used for the first condensing, being followed by engine, the hand instruments being rotated ½ or ¼ turn.

The last layer can be condensed with the mallet if it is liked. Agate burnishers do not get gilded so quickly and so save the time occupied in cleaning. When the burnishers get gilded they are apt to tear the gold and also generate far more heat than when gilding has not taken place.

The matrix for front teeth may be made of watch spring, sloped away from the cavity so that the slope of the matrix heads right into the cavity, causing all the force of the rotating burnisher to be expended in driving the gold against the walls of the cavity and spring, and not forcing it between the teeth.

Cavities may be filled this way with tin and finished with gold. The tin should be fresh. The last layer of tin to which the gold is to be attached must be very carefully condensed and tried all over, especially at the margins to see that it is thoroughly condensed, finally trimming away the excess with an excavator. The last layer should be completed with partially annealed gold, packed either by hand pressure, or mallet, or hand, or engine burnishers rotating, but hand rotation is best. This should be still further condensed by the engine burnisher. The gold under the rotating instrument readily unites with the tin, the gold being heated and condensed by hand which it does not do with the mallet or hand pressure alone without rotation. The filling should then be cut down to bite and polished. This can be done in crown cavity of molar or in an interstitial cavity with a matrix. The walls for this need not be so strong as for gold, and this is thought by Herbst to be better than osteo or amalgam.

When there is a difficulty in making the first layer go into its place, press a few slightly heated cylinders into the floor of the cavity and then fill the cavity two-thirds, or quite fully, of clean dry cotton wool, and burnish. The gold will then be found to have gone down beautifully and uniformly. Less gold should be put in at a time when it is condensed under cotton. For the second layer, slightly heated cylinders are placed on the gold already condensed, pressed into position and then burnished through cotton as before; then the wool is removed and condensation is accomplished without wool. Examine for soft places and make good with small cylinders. The advantages of the wool are that it makes the gold secure on the floor of the cavity, and is equally condensed all through, and not harder on the surface because the gold does not come into contact with the instrument. It may be made quite hard and solid after the wool is removed by pressing revolving instrument over the surface. The cavity may be lined with gold by taking a piece of heavy foil suitable to the size of the cavity, or a condensed cylinder, placing it in position and pressing firmly against the tooth with cotton wool ; the lining fairly fixed in position, the cavity is filled two-thirds with wool, strong pressure being used by rotating burnisher to force gold under the wool against the walls—then roll a piece of tin into a ball to fit the cavity and burnish through this especially on to the margin. This makes gold quite non-cohesive, which does not matter as only a gold lining is wanted. When tin is removed every undercut, &c., made for retaining filling will be clearly imprinted as if stamped in gold, so accurately is it pressed by the tin. Before the amalgam is inserted, the gold must be varnished with copal or other varnish, which must be thoroughly dried by hot air before the amalgam is added. The amalgam is packed by hand in ordinary way, not by rotation. Slope filling towards back to show as little amalgam as possible.

In finishing off gold fillings in crown cavities the gold may be cut down to the bite and free from the edges, leaving nowhere overhanging edges of gold, either by fine cut burs, or corundum wheels or points, and then finished with fine stones and pumice on wood or buff points.

Non-cohesive gold should not be polished, always burnished, as however well it may be packed burnishing will improve the edge.

Interstitial cavities may be trimmed first of all with a file, if accessible, or a dividing file, and then shaped with emery discs, and the thickened rim discs for the cervical edge when it is not wanted to cut away too much near the crown, and in contour fillings. If the discs are soaped with a little hard dry soap they cut better, and are less liable to crumple if caught against another tooth ; another good point about the soaped discs is that all the gold cut from the filling adheres to the discs, and can be saved instead of wasted as is the case with dry discs. When by the coarse discs the filling is made flush everywhere with the edges, finer discs are run to take out scratches, and finer still, and if they are all soaped ; the very fine ones, if a trifle damp after soaping, will give a bright polish, which in a case where there is no room to run a rubber disc is very convenient.

Amalgam fillings, to secure the best results should also be treated this way, as food being collected by over-hanging edges is a great source of re-decay. Of course, stones used for amalgam are best kept away from gold. Amalgam, in addition to polishing, may be burnished, but always up and down a filling, not across, as this gives it a whiter look, and polished amalgams retain their colour longer and better than if not polished.

TIN.

Tin is packed in the same way as non-cohesive gold, but is easier, softer and quicker to work. It may be introduced by the Herbst method, the tin going down beautifully under the burnisher, and seeming to cohere somewhat, but for this the tin must be fresh with a bright surface. Tin being soft is not much good on a masticating surface, and should always be protected with a layer of gold.

In a crown cavity, if it be started with tin, it should be stopped at the junction of the enamel and dentine, and there have the gold built on it. In an interstitial cavity, it may be packed as high as liked, always providing sufficient hold is left to make the superposed gold perfectly firm.

Tin and gold used together, one sheet of tin between two of gold, non-cohesive, is used as rope or tape and packed non-cohesively, and makes a splendidly hard filling.

The presence of moisture is an advantage rather than a defect in using this, as it causes the change, whatever it is, to take place sooner than if the cavity was dry. It can be safely used in cavities which were unable to be perfectly excavated or sterilized, and if liked, the first few pieces may be dipped in carbolic or oil of cloves if the filling is near the pulp and the cavity rather sensitive.

Interstitial cavities may be entirely filled with this or have the top part filled with gold. In crown cavities it soon gets hard enough to withstand mastication.

Where the discoloration is likely to show, the walls may be lined with gold if desired.

It is finished, like non-cohesive gold, by being burnished, not polished.

AMALGAMS.

On the question of amalgams there is a very great diversity of opinion among the many experimenters. This holds both as to the properties and methods of working.

Copper amalgam requires to be heated till bubbles of mercury cease to appear, when it is crushed in a mortar and vigorously pounded till quite soft and plastic. In this condition it is usually too soft to use, as it would contract very much and curl away from the edges. If squeezed hard between the fingers some mercury will be squeezed out. The floor of the filling may be made of this, and then having enveloped the rest of the amalgam in a piece of chamois skin and squeezed out all the mercury possible with a pair of pliers, finish the filling with this. In this way there is less contraction than if it had all been of the same consistency.

When the cavity is near the pulp and there is not room to put a floor of osteo, the cavity may be painted with thick chlora-percha, and the amalgam introduced before the solvent has all evaporated, else hard biting may cause pain if the filling rests on a foundation of gutta-percha.

A layer of osteo may be placed on floor and the amalgam added before it is quite set, giving extra hold where the retention power of cavity is weak.

For a non-conducting floor for amalgam (or for osteo), a thin piece of cork dipped in carbolized resin is very good, as it is sedative and antiseptic and adhesive, beside being a non-conductor of heat.

All platinum amalgams should have as little mercury as possible, and must be worked very quickly and in such a manner that they are not liable to be disturbed till hard. The platinum combines rapidly and strongly with the mercury, but its power of setting lasts but a very short time.

Gold filling which have failed at the cervical edge may be patched with amalgam ; if the amalgam does not hold well, a little mercury rubbed on the gold will make it unite readily.

There are two points about amalgam fillings that are important ; the first is that wherever there is a bevelled edge of enamel, it does not matter what amalgam is used, or how it is inserted, at that point the filling will leak. This remark applies equally to gutta percha. The second point is that an amalgam, soft or hard does not make a good filling if it is simply placed in the cavity and tucked into the undercuts and then trimmed.

Mr. Fletcher says that a small ball-headed instrument is an absolute necessity in order to obtain sound plugs which do not discolour the dentine. He says, "there is one way in which really first rate fillings can be made with second rate amalgams and which gives such special results in the theoretical testing as to enable a practised hand to make with a good amalgam the most absolutely faultless work. This is to take a small portion of the amalgam, anchor it in some corner or retaining point, and then gradually work and condense it all over the surface of the cavity, so as to get a thin layer as a lining. When this is done the remainder may be almost thrown in with a spade, and the plugs are far more perfect than can possibly be obtained in any other way." At another time he says, "With regard to inserting amalgams, the best way is to pack dry as possible, and to burnish or mallet surface with layer of tin over it to absorb the mercury which rises to surface. If this be once properly tried, there will be no need to trouble either about spheroidal tendency or any other method of filling.

(To be continued.)

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Ordinary Monthly Meeting of the above Society was held on the 10th ult. Mr. Bowman Macleod (the President) occupied the chair, and there was a good attendance of members.

The minutes of the previous meeting were read and confirmed.

The Librarian (Mr. Ashley Gibbings) reported that since the previous meeting the "Transactions of the 7th International Congress of Hygiene and Demography," the "Transactions of the Medical Society of London, 1892," and other books had been received.

The Curator (Mr. Storer Bennett) stated that a photograph of a case described as "asymmetry of the cranium and jaws," had been received. The subject was a school boy, and the photograph spoke for itself.

Mr. R. H. Woodhouse thought it would be interesting if some history of the case could be obtained. He was inclined to think that the condition might be due to the use of forceps at the time of birth. Mr. R. H. Woodhouse continuing, narrated particulars of the amputation of a right upper lateral incisor for the cure of chronic abscess. The patient was a lady aged 33, and the tooth had been dead many years. The fang had been filled for a long time, and therefore there was no further benefit to be derived from filling. Several attempts had been made to cure the abscess but with only partial success. Mr. Woodhouse being desirous of preserving the tooth, decided to remove a portion of the fang in the neighbourhood of the abscess; he enlarged the sinus by dressing with cotton wool and carbolic acid. He could easily feel the exposed portion of the fang. After opening the sinus he passed a hard German fissure bur, and felt for the portion of the root where the periosteum was still adherent. The portion of the fang then fell back into the abscess, and he washed out the cavity, filling it with iodine liniment $4\frac{1}{2}$ times the strength of the tincture, he found this liniment not only very useful in chronic abscesses, but also of wonderfully good effect on dead teeth. The dressing was renewed three or four times, and in about three weeks the wound had completely healed, there being only a little dimple in the gum. He had recently seen the patient, again nine months after the operation, and the parts had quite healed—on very close examination he could only find a very fine sinus, and one that caused no inconvenience. It might be thought by some that it would have been better to have cut off the tooth, but he preferred the less heroic course. The portion of the fang (exhibited) did not look very much, and it seemed surprising that such a small portion should have caused the accumulation of so much pus and given so much discomfort.

Mr. CURNOCK instanced a somewhat similar case in his own practice. Dressings repeated from time to time did not result in devitalising the pulp, and the patient ultimately became tired of the treatment. She wished to have the tooth extracted, to which Mr. Curnock consented, but only upon the condition of putting it back again. When he removed the tooth he found a small hook on its fang, this he removed. He filled the fang with osteo in the ordinary way, and replanted the tooth. It did well and he had seen it several times during the past eight years ; the osteo was almost as perfect as when first put in.

Mr. G. CUNNINGHAM, commenting upon Mr. Woodhouse's case, said that amputation of the end of a root in such circumstances was not altogether a new operation. He had had considerable experience of it himself, and had seen several cases in the practice of others, but he could not but feel that there was a good deal of hap-hazard about the operation. He had a lively recollection of a troublesome chronic abscess in the end of a lower molar : after ineffectually treating by the usual methods, he decided to remove the abscess sac, or necrosed neck of the root, through the alveolus. First tracing the fistula to what he took to be the vicinity of the apex of the anterior root by means of a probe, he proceeded in heroic fashion to bur out the diseased part through the gum. The treatment did not effect a cure, and the abscess recurred in an acute form after a time. He then determined upon extraction and replantation. Having removed the tooth, he examined its roots, and discovered that instead of having amputated the end of the root, he had excavated a part of it, about half way between the fang of the tooth and the apex. He cut away the abscessed sac, and treating the tooth with as little amount of medication as possible restored it to its place. It ultimately became firm, and there was no further trouble. He should like to say with regard to the utility of the operation of amputation, he resorted very much less to the practice since the introduction of the immediate treatment; he also had more confidence in replantation than had Mr. Woodhouse.

Mr. W. Hern said that he also had had one or two cases of the same nature as that brought forward by Mr. Woodhouse. The first he would mention was one he treated in private practice in October 1887. The young lady had two upper incisor teeth pivoted very well indeed, but unfortunately over the apex of each of the roots there was a chronic and very large gumboil with a rather large papilla. She suffered a good deal of discomfort from it, and it was a great eye-sore. She told Mr. Hern that the dentist whom she first consulted had taken off the crowns once and tried dressing the roots, but without effect. Mr. Hern removed one of the crowns and found the root pure; he came to the conclusion that the condition must be due to necrosis in the fang. The patient being young he was anxious to avoid the removal of the tooth, and therefore determined to treat the teeth as follows. Dealing with one incisor first, he applied cocaine at the point overlying the root, and then came down upon the fang, using rather a rough bur and burring away the whole end of the root, he could feel that it was rough and naked to the touch. After dressing the place with sulphate of copper the case did perfectly well, and within a short time the gumboil healed, there was only a very slight depression. He then treated the other incisor. Whether from contraction of the cicatricial tissue, or other causes, the gum began soon after to show the necks of the artificial teeth in a dark line, and the patient was anxious to have some fresh teeth. In 1891 or 1892, four or five years after, Mr. Hern cap-crowned both the teeth, and they had remained since. The other case he would refer to was one seen by himself at the Dental Hospital of London about eighteen months or two years ago. The patient, a man aged from twenty-five to thirty, came with a very large periosteal cyst over the right central incisor. From his history it appeared that when quite a youth he received a blow in the face by coming in contact with a pillar while running in the playground ; as a consequence he was frequently troubled by abscesses after, until finally he had a gradually increasing and painless swelling, for the treatment of which he came to the Dental Hospital. The cyst was so large that Mr. Hern thought it better, in case there should be any inflammatory trouble afterwards, to take him to a general hospital, where Mr. Pearce Gould opened the cyst. By passing in a probe Mr. Hern was able to come back upon a naked piece of root on the central incisor ; he made an incision over the point and opened it up, then cut the point completely off. The wound made had already healed, though the cyst wall, being so very large, had not become reduced to its normal condition.

Mr. H. B. GILL corroborated Mr. Woodhouse's statement as to the efficacy of iodine liniment. He had himself treated chronic abscesses with it, with the most satisfactory results.

Mr. R. H. WOODHOUSE replying, claimed no originality for the communication or the operation, a case he believed was reported in the Journal of the British Dental Association, and he knew of others. Mr. Cunningham seemed sceptical as to whether the periosteum was healed or not, of course it was necessarily a good deal a matter of conjecture. He found it necessary to pass the drill in very deeply before he could get alongside the fang ; using firm pressure, and being unable to get further down, he came to the conclusion that he had come to the periosteum. Mr. Cunningham also spoke of his case having a sac ; now it was evident that he (Mr. Woodhouse) did not make himself clear, as there was no sac adherent in his case whatever. With regard to extracting and replanting, he should like to point out the very great probability of fracture in removing a tooth, especially, as in this case, where there was nothing but a mere shell left, any attempt to extract a tooth in that condition must make it worthless for the purpose of replantation.

Mr. J. H REDMAN (Brighton), brought forward a case of non-eruption, which was remarkable for the number of teeth missing, he had never seen so many missing before. The patient, when he first saw her, had only two molars on each side, a canine misplaced, a central incisor in the upper jaw very much decayed, and only four molars in the lower jaw. She was naturally good looking, but the absence of the teeth quite spoilt her appearance ; her age was 24.

The teeth she had were all of very poor quality, and Mr. Redman capped them with gold, inserting an artificial denture top and bottom. After the case had been worn some time the point of a lower incisor erupted, probably due to pressure, but it came no further through the gum, and after a year still remained in the same condition. A bicuspid also erupted, but had to be extracted almost directly, owing to its miserable condition. With respect to the family history, the father and three sisters had all of them good dentures, and the mother fairly good; there was in her case one bicuspid missing at the age of 40, but since he had taken the case of the daughter in hand this bicuspid had erupted.

Mr. Robbins wished to know whether the mental condition of the patient was good, as in two out of three cases in his own experience there was a decided want of intelligence.

Mr. J. H. Redman replied that the girl was particularly bright and intelligent.

Mr. Storer Bennett was not inclined to favour the view that there was any connection between a want of intelligence and the non-eruption of teeth. He had in his mind the case of two sisters, aged about 35, who were his patients; they occupied eminent positions in society, and both ladies were extremely intelligent.

Mr. W. Hern enquired if the patient was one of the earlier or later members of the family? From previous cases reported, he thought that it would be found that the condition was more common in the earlier members. He should also like to ask if the temporary teeth were fairly normal?

Mr. H. Baldwin mentioned a case of a man aged 20 having only four six-year-old molars and two incisors in the lower jaw. This man happened to be the youngest of the family, and was particularly bright and intelligent.

Mr. J. H. Redman, in reply, said that the temporary set was perfect, and there was nothing abnormal about its eruption. The patient was the second daughter, the eldest had perfect teeth, as also had the two following his patient.

Mr. W. H. Coffin exhibited a strengthener which he had for many years used when necessary in lower dentures. It was simple and elegant, and in his opinion had so many advantages that it was the only form he employed. It consisted of a strip of hard platina, which he bent as near as possible to the shape of the model; then he took a piece of gold wire—such as is used in ordinary springs—

and soldered it to the platina piece, and the thing was complete. The advantages of this strengthener were that it occupied the whole thickness of the vulcanite (which might be polished to any extent), that it did not slip inside the vulcanite on flexure, and that it was sufficiently rigid without being too rigid.

Mr. J. MANSBRIDGE introduced the subject of mounting specimens for the microscope, and said that the method which he had adopted with success for mounting hard or calcified structures was the substitution of desiccated for liquid balsam. Employing the latter there was always the risk of the balsam running into the spaces and so rendering the section, if not at the time, after a time, practically valueless. To overcome this objection he had adopted the use of desiccated balsam. Having a prepared slide on the table he put a lump of desiccated balsam on the slide and heated it sufficiently to melt it; a warm cover-glass is then placed on the section and pressed down in such a way that all air is expelled, the slide is then removed on to a cold surface and the cover-glass pressed down for a few moments.

Mr. HOWARD MUMMERY thought that the method would be a very useful one. In the Wiel process the desiccated balsam already occupied the spaces, and thus prevented the liquid balsam flowing in.

Mr. F. J. BENNETT suggested glycerine jelly as an alternative, it could be used in such consistency that it was too solid to flow into the tubes. In his experience an alcoholic solution was also unreliable.

Mr. MANSBRIDGE thought that a specimen mounted in glycerine jelly would be hardly so permanent as one mounted in desiccated balsam.

Mr. F. J. BENNETT wished to say that if a rim of shellac were put round the specimen he thought it would be sufficiently permanent for all purposes.

Mr. W. R. HUMBY made a casual communication on "Annealing Gold for Stopping." He said that at the last meeting Mr. Brunton had introduced a form of spirit lamp which he considered better for annealing gold, in consequence of its preventing the over-heating, which is supposed to harden the gold. Many years ago, when about to take up gold stopping, he made a number of careful experiments for the purpose of ascertaining the properties of the metal, At that time there was a general dislike to placing gold, if it could be avoided, in a flame, the reason being, that if it got over-heated, more particularly at the edges, it was considered that it prevented its proper working. He then determined upon a series of experiments at different temperatures, and he had again verified the experiments before coming to the meeting. He commenced at the boiling point of water, and proceeded to see if he could spoil the working properties of the gold by raising the temperature, but found that he could not. He then adopted the melting point of tin, and tested the gold at intervals of 5 minutes up to 35 minutes, but the cohesive property still remained uninjured. He then left the melting point of tin and raised it to that of lead, and after 5 minutes the gold showed no loss of cohesive property ; at 15 minutes there was slight loss and a little rolling, but it still worked ; at 45 minutes the cohesive property returned, and at 1 hour and 5 minutes it worked perfectly well. That coincided with his previous experiments except in one particular, that the gold was not so hard. In order to test the matter still further, he carried the heat to the melting point of zinc (750°), the gold slightly hardened, but worked, though not kindly, it afterwards came back to its normal condition. He then tried a a dull red heat, and found it worked soft right through. His next trial was a piece of platina raised to a bright red heat ; he did not detect any alterations except that it was more cohesive than usual. He then tested in the flame of a lamp in red heat with flame contact, and there was no loss of cohesive properties. As he had stated to Mr. Brunton in conversation, in his opinion it was not the heat but the peculiar treatment which affected the cohesiveness of gold.

Mr. WALTER COFFIN was inclined to confirm Mr. Humby's conclusions as to the absolute molecular softness of gold, but was at the same time of opinion that when a cylinder formed of many laminæ was subjected to a heat such as would melt it, its properties as a filling material must be altered.

Mr. H. BALDWIN thought that most practitioners had found that if gold is at all sweated it absolutely refuses to stick. For a considerable time he had used only one thickness, viz., No. 20.

Mr. H. B. Gill remarked that some years ago he was informed by a jeweller that if he wanted to make his gold plates fit well he should anneal them in charcoal; his experience with plates had been the same as Mr. Humby's with the cylinders, but he should add that the charcoal made the gold dirty and crystalised it so that after a few months it began to crack.

Mr. Ashley Barrett showed models of two recent extractions in hospital practice. The one represented a lower incisor taken from a girl aged 16, which had a very peculiar cusp on the lingual surface. The other represented an upper right second molar and upper right third molar; he was anxious to remove the one but the other also came away, and he found that it adhered with great tenacity, owing to cemental union with the tooth in front.

Mr. Robbins showed models of an enormously open bite in a person 22 years of age. The models had been sent by Mr. Gould, of Madras, who was anxious to have the advice of the members as to treatment.

The usual votes of thanks concluded the meeting.

DENTAL STUDENTS' SOCIETY, LONDON DENTAL HOSPITAL.

Ordinary General Meeting, held on March 13th, 1893, W. H. Woodruff, Esq., President, in the chair. The minutes of the previous meeting were read and confirmed.

The President asked that the Society nominate a Museum and Microscope Committee, to carry on the work of the "Microscope" and late "Fad and Wrinkle" Committees, and also read the following resolution of the "Fad and Wrinkle" Committee, viz.: "That this committee be terminated, and that the Society be asked to form a Museum and Microscopic Committee to aid in furnishing the the museum with specimens of microscope work, new instruments, peculiar cases, details of processes, and series of models and plates illustrating the treatment of regulation cases; and that it consist of a chairman, the curator of the museum, ex-officio vice-chairman and seven members."

The following gentlemen were elected, Messrs. E. Mosely, W. May, E. H. Mackley, Strand; F. Brown, J. R. Freeman, D. P. Gabell, F. H. Clarence, J. F. Colyer, and S. J. Hankey.

It was then proposed by Mr. D. P. Gabell and seconded by Mr. J. Trevor Hankey, "that the committee have power to add to its number." Carried.

On Casual Communications being called for, Mr. Brown brought forward a method of electrotyping impressions, so as to produce copper or tinned copper models, which he briefly explained. In answer to several questions, Mr. Brown said that it gave little trouble, took at least three hours, did not buckle when zinc was poured into it for use as a die, and only required a very simple battery, which also formed the bath.

Mr. W. Gabell presented a single-rooted upper second molar, and a case of gemination of the temporary teeth, and a case of open bite, the patient being about fourteen, with a history of adenoid growths.

Mr. May, on behalf of Mr. Blackman, presented a tooth with a very curious history of periostial trouble.

Mr. Schelling introduced to the Society's notice some nerve extractors and broaches.

The PRESIDENT said that he found Donaldson's cleansers preferable to all others.

Mr. Clarence preferred the pivot broaches for use with cotton wool, and the cleansers for removing pulps.

The PRESIDENT then called on Mr. Halliday for his paper on the "Manipulation of Filling Materials." See page 193.

At the conclusion of the paper it was decided to allow an extra half-hour for the discussion, the paper having occupied an hour.

In opening the discussion—

Mr. CLARENCE thanked the author for his paper, and said that he preferred to use grooves instead of retaining points, as they were far better, and to start with cylinders, using hand pressure only and then to finish with tape and the mallet. He regretted that Mr. Halliday had not mentioned contour amalgam, in working which material he preferred the Kirby method. He found old copper amalgam the best, and used a rag and not leather to squeeze out as being more effectual.

Mr. GOSSCHALK rose several times to say, that saliva ought always to be kept out of cavities for antiseptic reasons. He had seen a tin and gold filling, about the size of an 8-gr. gold, inserted in twenty minutes, and he thought done properly, which was not long. He had also seen some copper amalgams put in by the President a long time ago at the hospital, which had only wasted slightly.

The PRESIDENT said that this was an exception to the general rule.

Mr. MOSELY advocated the starting of gold fillings with a strip of gold, using a probe and small plugger; he said that it was now considered wrong to insert two amalgams at once and then cut in half, and he wished to know what became of the salts of the saliva in Mr. Halliday's method of drying a flooded gold.

Mr. W. Gabell wanted to hear more about crystal gold.

Mr. Hankey did not admire retaining points, and always used the first two or three cylinders unannealed. He regretted the omission of inlays in Mr. Halliday's paper.

Mr. May wished to have explained to him how a cavity could be larger inside than at the mouth and yet not undercut.

Mr. Brown asked what was the action which took place between the tin and gold in combination fillings.

Mr. Mackley said that retaining points were sometimes useful and had not the disadvantage of weakening the walls so much as grooves.

Mr. Clarence said that they should be used with discretion, and a layer of dentine always left between the groove and the enamel.

Mr. Gabell warned members of the very caustic action of thinly mixed oxy-chloride.

Mr. Schelling asked if anybody present had seen a Herbst filling done, he himself had seen one in a decrepid state, but thought they were too troublesome. He did not see the use of adding oil of cloves to tin cylinders, when it would all be pressed out in packing. He also thought that properly prepared copper amalgam fillings did not go at the cervical edge, and that to place gutta-percha in a wet cavity was bad practice.

Mr. W. May said that his only experience of a Herbst gold filling consisted in picking one out, which he found very easy, it was very granular, and he considered the method obsolete. He used Walb's crystal gold for starting cavities, avoided retaining points whenever possible, and always finished with tape. He further said, that we have no perfect amalgam yet, for though copper amalgam does not go at the edge, it does waste away ; he was trying a mixture of copper and other amalgams, they worked well, but he had not had the time to ascertain the results.

Mr. W. May (present student), had seen a patient with several well finished copper amalgams, all of which had gone at the cervical edge.

The President said that they had no perfect amalgam, and the results were very disappointing, copper amalgam wasted in some mouths, and its colour and staining were very variable ; Wageant's was he thought the best, and by only heating gently it can be made to set very quickly. He thought crystal gold was not a very great boon ;

the Herbst method was not a success in any way, and was now practically obsolete. Cohesive rope was very nice for starting cavities, and also for finishing with on top of cylinders. He had seen ivory and gold points for use with soft gold, but would be sorry to rely on them. He did not think that he had drilled a retaining point for a year, for he believed in a good square-shaped floor to start a filling with, they were not "retaining" points, but "starting" points.

In reply to the various speakers, Mr. HALLIDAY said: "I must first apologise to you, gentlemen, for giving you such a long paper, as I was hardly able to get it done in time to read it to-night, and I must therefore ask your indulgence on that point." In answer to Mr. Gosschalk, he said that it was not necessary to have the cavity absolutely swamped, although it might be wet. With regard to the salts in the saliva, they might be washed away by alcohol or rubbed away by burnishers, but if not he did not know where they went to. Inlays were omitted because he had not any practice at all with them, and he thought he had given the Society enough as it was without them. In saying that the cavity must be larger inside than at the mouth and yet without being undercut, he simply meant without making careful undercuts and grooves as usual for gold. He could not explain the action between tin and gold, and he had never heard any explanation. He agreed with Mr. Gabell in not using oxychloride thin, it should always be thick and kept away from the gum and the pulp. He then thanked the gentlemen for their consideration in listening to such a long, dry paper.

The PRESIDENT then proposed a vote of thanks to Mr. Halliday for his paper, and also to the gentlemen who had brought Casual Communications, which was carried.

It was then announced that the next meeting would be held on May 8th, when Mr. A. P. Densham would read a paper on "Operations about the Mouth." The proceedings then terminated.

THE BRITISH DENTAL ASSOCIATION.

ANNUAL MEETING AT BIRMINGHAM.

The 13th Annual Meeting of the British Dental Association was held in Birmingham on the 6th, 7th, and 8th of April. This is the first time that the metropolis of the Midlands has been the spot chosen for a meeting of the Association. This year also the Association have departed from their usual custom of holding their annual meeting in the autumn. The success, however, of the Birmingham Meeting, which was very largely attended, justifies the belief that in future this arrangement will be continued. The governors of Mason's College placed their handsome suite of rooms at the disposal of the members for their business meetings and demonstrations, whilst the Grand Hotel was selected as the social head quarters. Mr. F. E. Huxley has acted as Chairman, and Mr. A. E. Donagan as Secretary, of the Reception and Finance Committee, and their arrangements appeared to give every satisfaction.

The Conference was inaugurated by a reception on the Wednesday evening, given by the President (Mr. W. R. Roberts) and the Council of the Central Counties Branch. There was an attendance of upwards of 200 ladies and gentlemen.

The business of Thursday was commenced by a Meeting of the Representative Board in the Council Chamber of Mason's College, which was followed by the Annual General Meeting, which took place in the large Lecture Theatre, and was very largely attended. The Chair was taken by Mr. H. C. Quinby (the retiring President).

In his short valedictory address the retiring President referred to the relations of the Association with the General Medical Council. He thought he would not be far wrong in saying that some of them were of opinion that their interests had not been considered by the Council which had the control of their registration, but it was perhaps no matter of surprise that when that body were called upon to adopt their poorer relations, they, the dentists, should have been felt for a time to be an encumbrance. He thought, however, that the Council might now fairly be trusted to look well after the interests which were so closely intermingled with their own. In vacating the Chair, he could only thank the members for their many kindnesses to him during his period of office, and would ask them to excuse any shortcomings he might have displayed.

Mr. J. Smith-Turner then moved and Mr. Breward Neale seconded a hearty vote of thanks to Mr. Quinby for his services, and it was carried by acclamation.

After a few words of thanks from Mr. Quinby—

Mr. M. H. Breward Neale (President-Elect) took the Chair and proceeded to deliver the

Inaugural Address.

Mr. Breward Neale offered, on behalf of the members of the Central Branch, a hearty welcome to the Association on their visit to Birmingham. It had, he said, been found expedient to alter the usual arrangements by devoting more time to demonstrations, whilst as a tenative measure a microscopical section had been inaugurated, in order to enable members who were interested in that branch of work, to meet together and discuss under suitable conditions the latest developments in that ever-advancing science.

He congratulated the members that they were practitioners of dentistry, for he held that there were few callings which offered more satisfaction to earnest workers. To relieve human suffering was one of the highest privileges of man, and though it was true that their responsibilities were not so great as those of their medical brethren, they must be aware that the effects of the discomforts and irritating miseries of the small ailments, to the relief of which they ministered, proved far more deleterious than might at first sight appear. The successful physician or surgeon could accomplish his work with comparative ease, controlling the time each case occupied without injury to the patient or injustice to himself, but in dental work it was not so, for each visit of a patient necessitated the accomplishment of something, and it would be disastrous to both practitioner and patient if sufficient time were not given to the proper fulfilment of each operation. To do this, it sometimes required a great effort, for how often would it not suit the passing convenience of both the operator and patient to give a much shorter time to the operation than its proper performance demanded. An inclination to scamp their work, which sometimes seemed almost forced upon them, constituted a real danger, and those who gave way to the temptation, instead of developing higher grades of their calling, allowed themselves to become mere machines. To such men the saving of a molar, or the performance of a difficult operation had no interest whatever. They received with the same indifference the success or failure of their efforts to preserve the natural teeth, buoying themselves up with the thought that ultimate relief could always be afforded by extraction. He admitted that this state of affairs only existed to a limited extent, and not among the best men, but it was a condition of things against which they ought to guard. It was the duty of dentists to teach the public in what their difficulties consisted and how these difficulties were to be overcome, for without the aid and sympathy of their patients, they could not succeed in accomplishing the best work—the best for the patients and the best for themselves. No maxim suited their calling so well as that of "Festina lente." It was not within their power, by giving their patients directions, and a prescription to achieve the restoration of their teeth, but they could lay down rules for the patient's guidance, and could promise them that, if they were faithfully carried out, the advance of decay would be checked. The importance of periodical inspection of the teeth could not be too forcibly insisted upon. That prevention is better than cure was in no case more thoroughly exemplified than in the treatment of diseases of the teeth. In this connection he would direct attention to the action taken some years ago by the Executive of the Birmingham Dental Hospital. After careful thought, it was determined to restrict the number of patients in order that the character of the work might be improved. The result was that a serious danger had been avoided, a danger which appeared imminent, that the institution would become, through extreme pressure of work, a hugh tooth-extracting establishment. Owing to the wisdom of the new regulations, the hospital had been transformed into a most useful organisation, wherein the deserving intelligent poor could have conservative dentistry practised for their benefit, and obtain dental assistance of a character which they would seek in vain elsewhere. In 1887, the number of patients treated was 12,133, and the number of fillings 1,062, extractions being performed in 10,275 cases. In 1888, the year in which the registration fee was introduced, the number of patients fell to 9,864, and the number of fillings rose to 1,650, in 1889 the number of patients was 6,780, and the number of fillings increased to 1,650, whilst in 1892 they had 5,930 patients and 2,427 fillings, of which 520 were with gold. The discrimination in the reception of cases, he was convinced, was one of the remedies against the overcrowding of all their institutions for the relief of the sick and suffering. As to dental education, he submitted that they had, as yet, not attained to the best mode of training their students, especially in the initial stages of their career. He found fault with the system of general education now in vogue as not calculated to stimulate the general intelligence of pupils. Too often the memory was cultivated at the expense of valuable mental traits, which, had they been recognised and encouraged would have made the man, even though they marred the scholar. Much, no doubt, depended on school life, but he was disposed to question whether the duty of parents, in selecting suitable occupations for their children was sufficiently regarded by them. None the less trite than true was the law "You cannot fit a square peg into a round hole." Probably no profession exemplified the truth of this more than their own, and disregard of it too often spelt failure in the case of many a promising boy. It seemed to him that the present system of training in the mechanical portion of their professional work was unsatisfactory. As a rule, no definite time was fixed during which instruction was to be given, and on that account the system of apprenticeship to a private dental practitioner, which at present obtained, was not without great disadvantages, and he believed that on the whole, students would derive greater benefit from formal instruction given systematically in an institution, in which teaching was the first and last consideration, and in which all the appliances for teaching were ever at hand, than from the precarious instruction afforded by the present system. He would suggest that the three years apprenticeship should be devoted entirely to practical work, and that the period of collegiate training should be extended to five years. The President then spoke of "bar and bridge work." Nothing, he said, during his twenty years practice in that town had given him greater satisfaction than that description of mechanical work. It was sometimes alleged that it was impracticable and unscientific, but that view, he thought, arose from a lack of practical knowledge of its application and field of use. The interference with the mobility of the roots of the teeth was of no practical importance, and the collars did not, he believed, injure the soft tissues, or materially affect the blood supply as had been suggested by some critics. The difficulty of adjusting the various devices employed was greatly diminished by freely shaping the roots of the teeth to be fitted in such a way as to render the application of collars, etc., comparatively easy. They should be made cone-shaped, and the circumference should be left greatest at the point where the collar terminated. In conclusion, the President said he hoped the meeting would be fruitful in good results, and strengthen the feeling of brotherhood which should and did exist among a body practising a refined calling, and that concurrently with the growth of professional attainments, the ethical standard might be still further raised.

On the motion of Mr. Reginald Roberts, seconded by Mr. S. J. Hutchinson, a cordial vote of thanks was passed to the President for his address, and the business of the Meeting was proceeded with.

The Hon. Treasurer (Mr. Woodruff) then read his statement, which after some discussion was agreed to.

The Secretary's report was then read. It contained the following paragraph :—

" Your executive have, as usual, had reports of alleged infringement of the Dentists' Act ; these cases are considered by the Business Committee, and in many instances laid before our legal advisers, it is but seldom any informants will support us in legal proceedings, and we regret to say the bulk of evidence, or what is considered evidence, is generally accompanied by a condition of secrecy, and sometimes, when co-operation is promised and relied on, is withdrawn at the last moment. There are still many cases under consideration, but owing to the change in the time of meeting, and the prolonged illness of our Hon. Secretary, they have not received that attention which they would otherwise have had."

The President said the place of meeting for 1894 which had been chosen was Newcastle-on-Tyne, but as there was no branch at Newcastle-on-Tyne, and as far as he knew, there was no one who would fill the office of President.

On the motion of Mr. Campbell, seconded by Mr. Browne-Mason, it was agreed to hold the Annual Meeting for 1894 at Newcastle-on-Tyne, in the spring of the year.

The President's resolution that Mr. C. S. Tomes, F.R.S., be President-elect was then put and carried unanimously, and the meeting terminated.

Afternoon Meeting.

The afternoon meeting was devoted to the consideration of scientific subjects.

Mr. C. S. Tomes, as President of the Microscopical Section, delivered an opening address. He thought that the institution of a microscopical section was a very good idea. There was no stimulus in the world to work of any kind, no encouragement half so good as that of meeting and talking with others who were engaged in similar pursuits. He thought it would be a very advantageous thing if all the histological work which bore upon dental subjects should be done by members of their own profession. There was no reason why it should not be. It might be urged that the practical outcome of microscopical research was not great. That might be urged against every form of scientific observation whatsoever. Some of the most important steps towards the attainment of practical results had been the outcome of scientific observation which at the moment appeared to have no practical bearing whatever. He thought, however, they could say more than that. They might say that their knowledge of dental caries in its recent progress owed an immence deal to microscopical investigation. All that they now knew in addition to what they knew twenty years ago was due to microscopical research. Nay, more, he would predict that what they would know in another twenty years would be the outcome of microscopical and bacteriological, which was practically microscopical, research. The inherent difficulties of their subject was very great. They had to deal with the investigation of normal dental tissues, with hard and soft tissues in close conjunction with one another. The means by which they could demonstrate the structure of the one generally led more or less to the destruction of the other, and so it happened that there was no method of preparation known which would demonstrate at one and the same time, all, or even most, of the points that they wished to investigate. The consequence was that there were all sorts of divergences of opinion. There was room for investigation in any direction which they pleased to work. Recent investigations, particularly those of Mr. Mummery, had taken down the distinctness that used to be drawn between dental and other tissues, such as bone. Instances were found where in tissues the outer surface of the bone was practically dentinal tubes and their definition of dentine was all gone. There was any amount of work to be done in that direction, and as to what the odontoblast cells could do. It had always been the custom to say that they formed the whole of dentine, but now it was known that they did not. They had now to find new work for the odontoblast cells. If he might venture to forecast their future, he thought it was to furnish the soft contents of the dentinal tubes, and to keep them open. In advocating microscopical research, he might say that within the last few years much had been done by German writers, but not very much, he was afraid, by English. That was a reproach that ought to be removed.

Mr. WOODRUFF then proposed that a formal resolution of thanks should be sent to the International Medical Congress to be held in Rome, for their invitation to the Association, with regret that they were unable to accept it. Mr. HUXLEY seconded the resolution.

A paper was then read which had been prepared by Mr. S. J. Hutchinson, M.R.C.S., L.D.S., and Mr. Morton Smale, M.R.C.S., L.D.S., on

"SOME CASES OF ANTERIOR PROTRUSION OF INCISORS SUCCESSFULLY TREATED BY TWO DIFFERENT METHODS."

It was mentioned that to draw in prominent incisor and canine teeth, due regard must be had to the contour of the face, and the "bite" or articulation of the lower incisors behind the upper ones; sometimes the latter bite against the necks of the former, sometimes they are even much more within the arch. The broad principle of treatment is to extract the four first bicuspids, taking into due consideration various collateral circumstances, such as the state of the first molars and second bicuspids. Taking, therefore, cases where it is justifiable to remove the first bicuspids, we can now describe in brief the mode of treatment. Mr. S. J. Hutchinson uses a plain vulcanite plate capping the first molar and second bicuspid in the upper, the plate being made of the kind called a "saddle" plate, which goes *straight* across the palate from bicuspid to bicuspid, and from molar to molar. The object of leaving uncovered the second molars is to allow them to rise in their sockets and so to "raise the bite." This shows that these cases are best undertaken directly the second molars are sufficiently erupted as to antagonise one another. The motive power is a strip of rubber dam $\frac{1}{8}$ of an inch wide and about 2 inches long, or perhaps $2\frac{1}{2}$ inches. Two holes are drilled in the plates at the top of the bicuspids, and a piece of silk threaded through and tied; the elastic is then stretched and tied at each end, the plate inserted, and the strip of rubber passed in front of the teeth. Sometimes (at first) it slips up to the gum, and this is remedied by the use of a piece of gold bent twice at an angle of $22\frac{1}{2}$ degrees, with a third bend in which the rubber is caught. The patient is supplied with strips of rubber, and taught to replace them when broken or slack. This plate will act very rapidly, as it causes constant pressure, and in about three months can be replaced by a retention plate. Mr. Morton Smale uses a similar vulcanite arrangement, but instead of the rubber has a gold band in front of the teeth with two "tags" which rest on the tips of the centrals, and a strip of gold soldered to this which goes between the centrals and is continued by a pin on which a screw is turned. This passes through a hole in the vulcanite behind the centrals, and on the screw a nut is placed, which can be tightened by the patient with a suitable spanner adapted to the nut. Both plans have produced equally good results, but both depend very much on the intelligence of the patient. It was urged in these cases to remember the axiom of Sir James Paget —"Constant pressure produces absorption; intermittent pressure produces hypertrophy"!

Mr. W. H. COFFIN desired to emphasize the point of the very great effect which was produced from a slight and apparently quite insufficient force, if continued sufficiently long. Mr. Hutchinson, he thought, would not claim any novelty in fundamental principle, but only in the skilful and careful application of it. Cases when rightly selected and carefully attended to were capable of amelioration with very simple devices. He preferred simple devices to all the screws and intermittent actions, which were very ingenious, but were not so scientific in their pathological application.

Mr. W. HARDY thought the difficulty lay more in maintaining the teeth in their proper position than in getting them there.

After remarks from Mr. Cunningham, Mr. Coxon, Mr. Booth-Pearsall, Mr. Matthews, Mr. Balkwill, and the President—

Mr. HUTCHINSON, in reply, said he thought it was necessary to keep the cap on the retention plate for the first three or four months, because the great object in his experience was to get the second molars to grow even higher than they were wanted, because whilst they were coming down again the first molar and the second bicuspid were going up, and an equal bite could be secured. He had great appreciation for the method mentioned of treating these cases by the occipital night cap. He thought that one secret of the success of the treatment was to let the patients wear the retention plate only at night. He knew that the plates were not new, but after 18 years experience he had at last arrived at a method which gave a certain amount of success.

A paper was then read by Mr. Quinby on "The Extraction of Molars as a means of Preventing Decay." The author mentioned that the result of the discussion at the last Annual Meeting on the extraction of all the six-year-old molars showed that as a means of regulating the general positions of the teeth in the dental-arches, and of avoiding crowding, the symmetrical extraction of four teeth in the bicuspid region was a more popular method of treatment than that of the six-year molars. On the present occasion the author of the paper referred more especially to the beneficial effects of extraction of the six-year molars in preventing decay, by allowing the teeth to separate one from another until complete non-contact all round is established in each arch. He was prepared to testify to the efficacy of the method of treatment in such cases after an experience of twenty-five years' practice in it. He pointed out that the eruption of the wisdom teeth tended to the closing up of the spaces formed between the teeth after such treatment, and in cases where, from ill-developed wisdoms or non-eruption of these teeth, the spaces between the front teeth have not closed up entirely, the general results are, in his opinion, still to be considered satisfactory. That the extraction of bicuspids in certain cases is also a valuable method of relieving crowding and hence preventing a decay he admitted, but considering the greater proneness to decay of the six-year molars and the more ornamental appearance of the bicuspids, he preferred to make room by the extraction of the former, and thus prevent decay occurring in the latter and other teeth anterior to them.

Mr. BOOTH-PEARSALL thought it was quite evident from Mr. Quinby's paper that the author had not made a study of the anatomical relations of the six-year-old molars. There was no doubt that the six-year-old molars formed the centre, so to speak, of the "dental solar system." Instead of saying that all six.year-old molars should be extracted, even if only moderately decayed, he would draw attention to the fact that the statistics which were put before them with respect to the value of the six-year-old molar was very distinct. He thought that if the question was studied it would be seen that mechanically it was impossible not to have a great difference in the angle of the jaw in consequence of the destruction of the six-year-old molars.

Mr. MATHESON thought it very bad practice indeed to attempt to keep all the sixteen teeth in the upper jaw in the head simply for the sake of keeping them there. As to the question of what tooth it was best to remove to prevent decay, he thought a practitioner must use his own discretion. In many cases the second bicuspid was the best tooth to remove, because the six-year-old molar was and always must be the chief masticating tooth. The bicuspid was always the more difficult of the two to make permanent and to make good, but allowing for all that, and for the fact that the molar was the chief masticating tooth, allowing that it was easier to keep a bad molar than a bad bicuspid, he agreed with Mr. Quinby that in the vast majority of cases the six-year-old molar was the best tooth to extract for the prevention of decay.

After remarks from Mr. Morgan Hughes, Mr. O'Duffy, Mr. Campion and the President—

Mr. QUINBY, in reply, said he really did not care very much about the anatomical results so long as he preserved twenty-eight good teeth. He did not by any means deprecate the effect of extraction in the treatment of irregularities, but he wished to accentuate the practice of extraction simply for the prevention of decay and nothing else, without any reference to irregularity. Even though tilting would result, he would extract. He did not always extract the molars. He never did it without thorough and careful study of each particular case on its merits. When, however, he was satisfied he was right, he did it without any scruple.

A paper was then read by Mr. Dall on "A New Method of Preventing Lateral and Forward Movement of Lower Dentures in Edentulous Cases," and the meeting adjourned.

RECEPTION BY THE MAYOR.

On Thursday evening the Mayor and Mayoress (Alderman and Mrs. Lawley Parker) entertained upwards of 250 members of the Association at a reception held at the Council House. Amongst those who were invited to meet the members of the Association were the Birmingham and district members of the British Medical Association and of the Medical Institute, and the chairman and hon. secretaries of the medical charities of the city, and the Managing Committee of the Birmingham Dental Hospital. A pleasant and enjoyable evening was spent in the tastefully decorated rooms, the musical portion of the entertainment being contributed to by Mr. M. A. Gilmer's bijou orchestra and Mr. Randell's choir.

FRIDAY'S PROCEEDINGS.

The first meeting, held on Friday, was that of the subscribers and friends of the Dental Benevolent Fund, which took place in the Council Chamber of Mason College, after which the following demonstrations were given in the Examination Hall of the same College.

For special account of the Demonstrations see close of this report, p. 227.

AFTERNOON MEETING.

Mr. CUNNINGHAM read the third Report of the Committee appointed by the British Dental Association to conduct the collective investigation as to the condition of the teeth of school children. After mentioning the various schools which had been examined, and giving statistics as to the number of children with defective teeth, teeth requiring either extraction or filling, the report stated that the committee advised that the following means should be adopted for preventing and ameliorating the results of dental disease :—

(*a*) That a tooth brush and simple tooth powder be provided for each boy, and that a tooth brush drill after the last meal of the day be instituted.

(*b*) That a qualified dental surgeon be appointed to attend one day in each week for five or six hours.

(*c*) That an inspection of the boys' mouths be so arranged that each boy would be examined at least twice during the year : new cases being seen at the first visit after their admission.

(*d*) That a careful record be kept of all operations performed at each visit. That a brief report, showing clearly the number of *teeth filled* and the number of *teeth extracted*, especially those of the *permanent* set, be presented to the Committee of Management once in every three months, and that a full report be presented once in each year.

(*e*) That the Committee of Management should pay the dental surgeon a salary of £100 per annum, and provide a suitably equipped dental surgery and materials.

(*f*) That as it will be impossible for the dental surgeon to do more than inspect and put all the new boys' teeth in order, besides attending to urgent cases amongst the old boys, it would be advisable to allow the dental surgeon to temporarily appoint a qualified assistant at a weekly salary of four guineas to attend daily for six hours and carry out treatment under his directions until the teeth of the present, or old boys, especially those in the "fair" class have been put in order. It is only by some temporary provision of this kind that the present boys' teeth can be adequately treated.

Mr. Sidney Spokes, Mr. Matheson, Mr. Turner, the President joined in the discussion which followed.

Mr. CUNNINGHAM, in reply, said that a tooth brush habit ought to be encouraged in the schools. He thought it would be well if the County Council scheme could include lectures on Preventive

Dentistry. He thought that a resolution to that effect would bear more weight with the Council if it came straight from the Association. He would move the following—"That the British Dental Association desire to express their gratification that some County Councils have included sanitary and health lectures in their technical education scheme, and think it would be well to extend such action; and further, that it would be materially strengthened by including a few lectures on Preventive Dentistry."

Mr. HEADRIDGE seconded the proposal.

Mr. SMITH-TURNER thought that before the Association committed itself to countenancing such lectures there ought to be a larger meeting to take a vote on it.

Mr. COFFIN then moved as an amendment. "That this matter should be referred for the favourable consideration of the Representative Board." Mr. WALKER seconded the amendment, which was carried.

Mr. SMITH-TURNER hoped that that would not be taken as any disrespect to Mr. Cunningham.

A communication by Mr. Jordan Lloyd, M.D., F.R.C.S., was then read on "Short Notes on two Cases of Tumour of Lower Jaw (*a*) Endosteal Fibroma, (*b*) Dentigerous Cyst," and was followed by a discussion in which the President and Mr. Smith-Turner took part.

Mr. BOOTH-PEARSALL read a paper on "Some Hints on the Formation and Arrangement of Dental Museums," of which the following is an abstract:—

Museums, modern expressions of thought, designed to illustrate one subject or many. Method in arrangement must underlie the display of collected material. Imperfect condition of dental museums in United Kingdom. On what basis are specimens of human teeth and casts of human jaws to be arranged? What are the normal types of teeth and of alveolar arches? Inability to obtain the loan of anatomical sets of human teeth. Varieties in form to be observed in plates and illustrations of Hunter, Blake, Fox, Bell, Rousseau, Tomes, and other dental writers. Has each author formed his own ideal of the normal type? Can specimens be arranged with reference to an anatomical basis? Can we define a normal standard suited as a basis from which to record variations to meet the needs of dental observers all over the world. Classification of abnormal specimens, irrespective of anatomical stability of form. Should classification be based on individual views in arrangement of dental museums, or on a basis that could be applied to all dental museums in order to aid facility of reference? How are plaster casts to be classified from anatomical type of U arch, ∩ elliptic arch, or Λ parabolic arch? Are irregularities of the teeth to be classified as cases tending to alveolar cleft palate? Full or exhausted classification needed, permitting growth and facility of reference. Want of a standing committee in the British Dental Association to devise and direct policy of succeeding annual museums. Cases for museums should be designed to suit nature of material to be collected and displayed. Disadvantages of deep cases; loss of light; perspective problem in rows of casts. Table cases unsuitable. Wall cases best. Deep sloping shelves retain perspective problem with diminution of light. Economy of space. Mahogany frames to hold specimens in dust-tight glass tubes invented by author. Dublin Museum cases shallow in depth and hung on wall, built in compartments to hold mahogany racks or plaster casts. Interchangeable arrangement. Provision made for labels. Practical treatment of casts. Redundancy of plaster. Anatomical position of upper and lower alveolar arch. Diagrammatic position of upper and lower arch in museum cases. Casts to be coloured in diagrammatic rather than naturalistic way. Diagrammatic colouring easy of execution. Naturalistic method possible by the work of the cultured few. Articulation of casts. Davenport method? Campion method. Need of organisation on the museum question. Subject only of interest to a limited number of members at present. Conclusion.

A long discussion followed and the meeting was adjourned.

THE MICROSCOPICAL SECTION.

The same afternoon a meeting of the Microscopical Section was held under the presidency of Mr. C. S. Tomes. There was a very full attendance. After some introductory remarks by the Chairman in explanation of some of the specimens exhibited in the section, a communication was made by Mr. E. Lloyd-Williams on the subject of the pathology of the root membrane. He first called attention to the change occuring in the tissue itself, then the changes occurring in the bone surrounding the membrane, and lastly the changes occurring in connection with the tooth itself. Mr. Tomes also exhibited by means of the lantern a number of microscopical sections of the root membrane, showing the various pathological changes. He was followed by Mr. Mummery, who exhibited some further specimens bearing upon the histology of the dental membrane, and by Mr. Hopewell-Smith, who exhibited sections of teeth suffering from acute periostitis. A short discussion took place, in which Dr. Baker, Mr. Campion, and the President took part.

THE ANNUAL DINNER.—The annual dinner of the Association was held in the evening in the Assembly Rooms, Edgbaston, and was largely attended. The chair was taken by the President (Mr. Breward Neale) and amongst the guests were the Mayor of Birmingham, (Alderman Lawley Parker), the Rev. J. C. Blissard, Mr. J. C. Holder, Mr. Chavasse, Dr. Dudley Buxton (London), Dr. Saundby, Mr. E. C. Mathews, Mr. Lawson Tait, Mr. Bennett May, Mr. Lloyd Owen, Mr. Barby, Mr. Jordan Lloyd, Mr. J. St. S. Wilders, Mr. Whitlock Mr. Vinrace, Mr. Crosby and Mr. Hughes. About 170 gentlemen in all were present.

SATURDAY'S PROCEEDINGS.

On Saturday morning it had been arranged that the papers remaining in the programme should be read and discussed, but owing to the great attraction of the demonstration, the meeting was so small that the papers were taken as read. They were the following:—On Dental Education, by Mr. T. E. Constant; on The Training of Students in Mechanical Dentistry, by Mr. G. T. Watts and on Dental Advertising and the Dentists' Act, by Mr. H. Blandy.

THE DEMONSTRATIONS.

The feature of the Birmingham meeting was the Demonstrations, and this was not solely the wish of the local arrangement committees, as a matter of fact, the desirability of more time and facility both for operators and onlookers for seeing what was done was expressed pretty generally, and as an outcome of which we have to report a fairly long list of demonstrations, some of which were distinct novelties. About fifteen subjects were taken each day, eleven of which were chair-side demonstrations. These took place in the examination hall of Mason College. The arrangements for which were to some extent an improvement upon what has been used before. Besides the usual barrier surrounding both operator and chair, there were platforms accommodating a second, and in some cases a third row for those who wished to view the work being done. This proved a decided advantage, as there was less crowding, and greater comfort for all. The utmost credit is due to Mr. Howard the local Secretary who made such excellent arrangements for the Demonstrations, arrangements which went a long way towards achieving the success which they undoubtedly proved.

Messrs. LENNOX & JONES, of Cambridge, demonstrated a method of making an all-gold crown with the aid of fusible metal. The metal was used to make a mandril for shaping the collar, the patient being thus saved much of the pain and annoyance caused by fitting in the mouth. The crown of the tooth being cut off, and the root stripped of enamel, a copper strip was clasped round the prepared root held in pliers and fastened with soft solder, thus forming a ferrule. This is filled with wax placed on the root, and impressions are taken of both upper and lower. Before being run in plaster an ordinary brass pin was stuck into the wax to render the removal of the collar an easy matter. Fusible was poured into the ferrule. The crown was struck up by the aid of a natural tooth set in fusible metal and carried in a steel punch. A proper occlusion was obtained by building up the mandril with wax, heating the crown, placing it on the top of the wax and articulating the models, thus forcing the crown into the required position ; wax was then put about the mandril between its lower edge and the edge of the crown in such a way as to give the form of the desired collar, a pattern for which was obtained by first cutting and trimming a piece of sheet percha to fit the mandril. The crown and collar were soldered together, filled with phosphate cement, and thrust into position upon the root into which a copper post had previously been screwed. The operation extended over the two days, though the crown was made and finished on the first, the fixing only being left for the second.

Mr. JAMES MOUNTFORD, L.D.S.Eng., of Birmingham, also made and fixed an all-gold crown, viz., on a second bicuspid root. Cocaine was used pretty freely during the operation of cutting down and shaping the root. A strip of No. 3 22-carat gold was fitted round the root and soldered with 18-carat plate used as solder. This being adjusted, a cap (also of 22-carat gold) was struck up by means of punches, the depressions on the reverse side being flushed with 18-carat plate. This the operator claims to be important on account of a necessity of sometimes adjusting bite slightly when the crown is finally fixed. The band was then placed on the root and so cut with sharp scissors till the cap was accommodated between it and the antagonizing tooth, having removed the two portions from the mouth, binding wire was tied round them whilst they were tacked with Ash's No. 1 solder, the wire removed and fully soldered. This completed the crown, which was finally fixed with oxyphosphate cement mixed thin, a gold post being fixed in the root with the one mixing.

Mr. James T. Rymer, M.R.C.S., L.D.S.Eng., D.Ds.Pens., of Brighton, demonstrated the "Richmond crown." A line right upper central was selected. A deep groove made both on the lingual and labial surfaces one-sixteenth of an inch below the gum margin. The tooth crown was now removed by cutting forceps leaving the pulp exposed. A sharp hickory peg was driven up the canal at one blow and pulp removed entire. The apex was immediately plugged with gutta-percha in chloroform. The root was then trimmed parallel at the neck, the canal drilled to admit a thick gold wire. A band was made and fitted, then soldered, after which a cap was soldered on. The patient (a female) in answer to numerous queries concerning amount of pain, replied that it was at no time severe.

Mr. Wm. Helyer, L.D.S.I., of Bristol, shewed an original method of fixing a crown, pointing out its advantages in cases where a denture depended upon it for support. Briefly described, the method is as follows: After the canal has been enlarged to receive the ordinary pin wire, a further enlargement is made at the orifice to the depth of about the $\frac{1}{16}$ and made oval in shape. Then using a wheel bur, a groove is cut on either side of the oval. To the pin which is to be used, a piece of platinum the size of the oval is soldered, so that when inserted and given a quarter of a turn it becomes securely locked in the root. The exposed end of the pin is screwed and a nut tapped to correspond, the crown having a hole drilled through to admit the passage of the pin. The fixing of the pin to the root is by means of gutta-percha, and this being done, the crown is put on and the nut screwed down, completing the operation. The advantage claimed is that the pin becomes a tension rod and vastly increases the power of resistance brought against the cutting edge of the tooth, and offering support for the retension of a denture almost equal to the natural tooth.

Mr. W. E. Harding, L.D.S.Eng., of Shrewsbury, filled a large cavity in the mesial surface of a right upper canine, using No. 8 gold foil non-cohesively, and finishing with cohesive foil in the form of tape. The non-cohesive gold was first rolled into rope and then cut across alternately straight and diagonally, thus making pointed pellets.

Mr. W. H. Woodruff, L.D.S.Eng., of London, filled an erosion in a left upper central. Kept dry by rubber, and silk ligature held by the left hand during the whole operation. Twenty per cent. solution of cocaine on wool was placed on the gum before the commencement, to facilitate application of rubber. The cavity was partly filled with soft gold cylinders, then with loose cohesive gold rope, being finished with cohesive tape. Roger's pneumatic and Bonwill's mechanical mallets being used. The filling was trimmed up by means of burrs, fine chisels and small emery discs, and finally with moose hide points.

Mr. A. E. Baker, L.R.C.P., M.R.C.S., L.D.S.Eng., of London, demonstrated the use of How's Cervical Window Clamp, an instrument designed for holding the rubber in position when filling gum line cavities in any of the ten anterior teeth in both upper and lower jaw. Mr. Baker explained the particular advantages of the instrument and also showed how it should be applied, which it would be worth while to give in detail. An application of cocaine having been used on the gum margin, the rubber was put on. The clamp was then adjusted with the ordinary forceps, care was taken to pull the rubber well away on the labial side to prevent its edge from passing beneath its outer cervical claw, and so obscuring part of the cavity. After the forceps were removed the clamp was pressed home with the thumb and finger, driving gum and rubber before it, its final grip being on the cementum beyond the cavity. The cavity filled was a typical one in left upper canine, oval in shape, the long axis transverse to that of the tooth. The gold (tape No. 64) was anchored by means of a groove running from distal to mesial. The polishing of the filling was effected after the removal of the clamp and rubber.

Mr. Wm. Hern, M.R.C.S., L.D.S.Eng., of London, gave a most useful and interesting demonstration on splints for fractured maxillæ, and also explained the method of obtaining models from which to construct the splints. This is accomplished thus : impressions of both upper and lower jaw are taken in the ordinary way with either stent, wax, or gutta-percha, without regard to displacement. The model thus obtained is sawn through at the seat of fracture and re-set so as to articulate with the model of opposing jaw. It is refixed in plaster and becomes a corrected model. Mr. Hern showed on a subject the Hammond wire splint, which is made of soft tinned-iron wire. This was advocated in all fractures of lower jaw when there were firm teeth on each side of fracture and no obstinate displacement. II. The Howard and Hayward or Kingsley vulcanite splint. III. The Gunning splint ; and IV. Mr. Hern's modification of the Gunning splint. This latter was also a vulcanite splint covering the teeth and alveolar process in the lower jaw, having blocks and pillars built upon its upper surface. The upper surfaces of the blocks and pillars are hollowed out into shallow troughs, containing gutta-percha for articulation with the upper teeth. The splint is fixed with elastic bands passing from a skull cap to a chin piece and buckled. This form was advocated in all difficult or obstinate cases. Specimens of other kinds of splints were shown.

Mr. F. H. BALKWILL, L.D.S.Eng., of Plymouth, filled a large and irregular crown cavity in anterior half of a second lower molar with soft gold cylinders, using smooth-ended pluggers. His mode of procedure was to fill all irregular crevices, first converting the cavity into a cylindrical one. The filling promised good service.

Mr. WM. DALL, L.D.S.Glas., of Glasgow, gave two demonstrations on (*a*) The reparation of teeth with porcelain ; (*b*) Dall's method of preventing lateral and forward motion in edentulous cases. Unfortunately space does not admit of anything like a full report of this interesting demonstration, which really requires to be told in detail ; we believe Mr. Dall intends giving his professional brethren at large, the benefit of his work. Large diagrams and models were used in illustration of the former subject. The method in the latter demonstration was shown in the mouth by a gentleman present.

Mr. HARRY ROSE, L.D.S.Eng., of London, demonstrated in continuous gum work, using Rose's furnace. On the first day, the method of firing, painting on the enamel, and refiring was shewn and explained. The case is placed in a fire-clay pot and embedded in powdered silex during the firing. The second days' demonstration consisted in illustrating the making of the plaster sections to a case already set up in wax, lining the sections with tissue paper, packing in the mineral compound and making ready for the firing process. The result of the firing proved very satisfactory.

Mr. J. H. GARTRELL, of Penzance, had something new to show in his new gum body and enamel for continuous gum work, and a new method for partial as well as full sets. Also a new furnace in which are combined pitcoal coke, charcoal and coal gas in firing the gum work. A partial set was baked ; other pieces which had been finished in two bakings of the gum body and enamel were shown· It is claimed that the shrinkage in the body is very little, and the colour of gum enamel equal to the American gum blocks. The new features in the process are the use of the ordinary hard platinum for the plates, a harder alloy of platinum and iridium for the bands ; also an alloy of fine gold and platinum for the solder. All the soldering is done with a small oxygen and coal gas blowpipe, remaining firmly knit during the baking. Herein is a difficulty overcome. Mr. Gartrell intends to publish an illustrated description of the process, and the apparatus and materials will be obtainable at the depots shortly. The results of the demonstration proved most encouraging, and were highly praised.

Mr. REGINALD BATES, L.D.S.Eng., of Liverpool, demonstrated the use of S. S. White's right angle engine mallet. He filled a distal cavity in a left lower canine, and pointed out the advantage of using such an instrument in cases when direct action could not be obtained.

Mr. W. T. MADIN, L.D.S.Glas. and Eng., of Birmingham, operated in a case of actual torsion, giving a quarter turn to a right upper central and lateral. He also shewed a new method of retaining the teeth in their new position by means of a tin splint previously prepared by swaging on a model which had had the mal-placed teeth cut off and replaced in the position desired. Several cases previously treated were exhibited and the operation shown to be successful.

Mr. ERNEST GARDNER, L.D.S.Eng., of London, gave a demonstration on partial gold crowns, the advantage ot using which in preference to big fillings, he explained by pointing out that frequently one met with cavities so large that the walls were insufficiently strong to support anything like a reliable filling, and yet it was unjustifiable to cut off entirely the remaining crown. In such cases he advocated gold caps or crowns restoring the lost contour. Such a crown should be constructed from thin 22-carat gold, overlapping slightly the walls of the cavity and having a network of wire soldered beneath. This should be fixed with oxy-phosphate cement, and when firmly set, the overlapping edges should be well burnished down to the enamel. Mr. Gardner's crowns had all the appearance of very good work.

Mr. LESLIE FRAZER, L.D.S.Edin., of Inverness, put in a very large contoured gold filling in a left upper central, using No. 40 gold foil. As a specimen of rapid manipulation as well as of good finish the filling was much admired. The electric mallet was used throughout the operation, which should insure its density and lasting power. Mr. Frazer also fixed a Logan crown on the fellow incisor. The two operations occupied about two hours.

Mr. J. J. ANDREW, L.D.S.Eng., of Belfast, demonstrated the use of Kirby's Motor in preparing cavities, in a number of which he inserted amalgam fillings.

Mr. BEADWELL GILL, L.D.S.Eng., of London, gave a demonstration in sponge gold filling.

Mr. W. R. HUMBY, L.D.S.Eng., of London, demonstrated combination fillings, in which he contends that the advantages of each filling material used are so combined as to get the best results. The filling, which was in a first lower molar, consisted first of all of a layer of cement upon which amalgam was packed, reaching from the cervical edge to within a small distance of the masticating surface. The remaining portion of the cavity was then filled with gold. After sufficient time has elapsed to allow of the amalgam setting, the gold is thoroughly burnished down, and the filling completed. It is worth while to note that in a case thus treated we have a large cavity quickly and economically filled with non-conducting layer beneath the metallic plug, and also above all perfect union of the amalgam to the cement and the gold. A matrix was of course used during the operation.

Mr. F. HARRISON, M.R.C.S., L.D.S.Eng., of Sheffield, shewed a method of retaining and strengthening large contoured amalgam fillings. This demonstration was illustrated both in the mouth and by means of lantern slides. Briefly described, the operation consists of driving a piece of Dental Alloy or gold wire, shaped almost like an ordinary tack, into the root previously filled with gutta-percha. This pin being left rough fixes itself quite firmly and becomes a steady post for anchorage. It is scarcely necessary to state that this treatment is intended for devitalized teeth only. For the most part such are the cases indicating heavy contouring.

Mr. J. H. REDMAN, L.D.S.I., D.D.S.Phil., of Brighton, demonstrated the Büttner system of crowning, and he pointed out several details facilitating both the preparation of the roots and the inserting of the pins and caps. Mr. Redman finds it convenient to have extra pins soldered to the edge of the upper surface of the cap, which make the necessary frequent application and removal an easy matter, as well as minimizing the pain to the patient.

Mr. Harry Baldwin, M.R.C.S., L.D.S.Eng., of London, fixed a Logan crown on a second lower bicuspid root. The demonstrator pointed out that for lower bicuspids a crown should be all porcelain for æsthetic reasons, or at any rate the top should be of porcelain, and that for such cases he preferred Logan crowns when there was room enough. His method of fixing the crown is by red base plate gutta-percha, the root being previously mopped out with a mixture of eucalyptus oil, chloroform and resin. For making the hole in the percha plug, Mr. Baldwin used a Logan pin soldered to an old excavator. The crown was then heated and pressed down into position by the patient biting on a pad of bibulous paper over it. The trimming away of the loose gutta-percha completed the operation.

Mr. E. A. Vickery, L.D.S.I., of Coventry, showed a number of diamond points, drills and trephines of his own construction, and illustrated their use in many ways. He pointed out the particular use of the trephines in fitting the mineral teeth on Büttner caps. Mr. Vickery also showed several specimens of vulcanizable gold.

Mr. Dencer Whittles, L.D.S.Eng., of Birmingham, showed two cases which had been successfully treated for protrusion of the lower teeth by means of skeleton head piece and chin cap. It is worth while to note that in one of the cases other methods had been tried for upwards of twelve months without success.

Mr. H. N. Grove, L.D.S.I., of Walsall, exhibited a patient for whom he had constructed an artificial nose and part of cheek. The loss of the natural feature being the result of an operation. One had only to listen while Mr. Grove explained the details in constructing the substitute, and recounted the various experiments necessary before anything like a successful result was attained, to appreciate the enormous amount of both patience and inventive skill exemplified in the apparatus shewn. Mr. Grove is to be congratulated on such successful treatment, as well as on the philanthropic motive which prompted the effort ; the patient being quite a poor one

Mr. E. Lloyd-Williams, L.R.C.P., M.R.C.S., L.D.S.Eng., gave a demonstration on Modified Suersen Obturator, and shewed a hospital patient—a woman 35 years of age—wearing a hard rubber Suersen Obturator for genital cleft of the soft palate. The various steps in the manufacture and adaptation of the obturator were explained in detail, and the important point of adapting the "box" to the surrounding soft structures was practically shown in the mouth of the patient, care being taken to emphasize the necessity of obtaining three out of the five surfaces of the box by means of the action of the pharynx at the back, and the soft palate at the sides, giving what the demonstrator termed "the swallowing line," as distinct impressions on a piece of soft composition. Mr. Lloyd-Williams advocated a perforated gold strengthener, and mentioned the following points as essential to the perfect packing of the box; absolute dryness and freedom from grease of the plaster surface; careful packing and sealing of the several pieces of rubber lining; accurate adaptation of the *lid* to the sides of the box; the use of a few drops of water in promoting even internal pressure during vulcanization; closure of the two valves of the flask *in the vulcanizer* when 25 lbs. of steam were registered, starting cold.

Mr. W. G. Owen, L.D.S.Eng., of Birmingham, was down for a demonstration on combination gold fillings, but owing to some unexplainable mistake the patient selected came too late to admit of the operation being done. Mr. Owen, however, explained by means of teeth and models his method, which is applicable to intustitial cavities in any of the incisor or canine teeth, and consists firstly, of so cutting the the cavity as to leave three walls, viz., an upper, a lower, and a perpendicular. If this is inadmissable, or involves too great a sacrifice of tooth substance, either the upper or lower wall, or both, are formed by building up cohesive gold to the required contour. Into this three-sided cavity soft gold cylinders are packed, with the axes placed antro-posteriorly. The cavity being nearly full the filling is finished with cohesive gold. The advantages claimed are first, good strong flat walls against which to mallet, second, saving of time.

Mr. J. L. Robertson, L.D.S.Eng., of Cheltenham, was also unable to give his promised demonstration, "A method for retaining or holding bridge work with case *in situ*," as per programme, on account of the inability of his patient to be present, through illness. He, however, shewed the method by means of models and specimens. This is really a combination of the split pin and Büttner cap. A collar being made to fit the top of the root, a cross-bar is soldered, running through which is a split platinum pin. Now, into the root is placed a tube taken from an ordinary tube tooth, being held in exact position by means of the cap and pin *in situ*, amalgam is packed round it. There is then a perfect canal, from which the split pin can at any time be removed, as well as its attachments.

Final Meeting.

The closing meeting of the Association was held at midday (the President) Mr. Breward Neale in the chair.

Votes of thanks were unanimously passed to the Mayor of Birmingham, the Governors of Mason College, the Central Counties Branch, the President of the Council, the readers of papers, the demonstrators and also the chairmen and secretaries of the Local Reception Finance Committee, and of the Museum and Microscopical Committee.

Mr. Cunningham asked if the President had received a communication from the executive or committee of the Dental Congress to be held in Chicago.

The President said he had received no communication whatever.

Mr. MacLeod said that he also understood there was some communication on the way. Its object was to explain, or try to explain, that the circular which was sent out in the names of the dentists of America sometime since, did not emanate from the committee who had the managment of the congress. The present executive denied the paternity of the circular. Therefore seeing that the names of the gentlemen mentioned were those of men whom they knew as being thoroughly respectable practitioners, who had the interests of practitioners at heart, their word might be taken that in some way, not easily explained, a mistake had been made. He would therefore propose that the Association should appoint certain gentlemen, and authorise them to appear as delegates at the congress, with the promise that the delegates so appointed, should try and get further explanation of the circular and take up a firm position as regarding the dental profession in Europe. They ought not certainly to allow the Americans under any circumstances to claim either priority or superiority in the dental profession. He would put his resolution in this form "That the Association nominate the President, with Messrs. Mummery Baker, Coffin and Woodruff to represent them at the World's Congress."

Mr. Cunningham seconded the resolution.

Mr. Smith-Turner moved as an amendment that the Association should maintain the position towards the question that it did at the last General Meeting. He could not say that he was possessed of that sweet simplicity which would induce him to accept a recantation of a circular which had been sent out broadcast.

The President explained that the position taken up at the last meeting was that they had received an invitation which they refused. He had now had a letter put into his hands containing six pages of matter which he could not consider then.

Mr. J. F. Colyer asked that the paragraphs in the circular referred to by Mr. Smith-Turner might be read.

Mr. Smith-Turner read the following extract from the circular: "The history of modern dentistry is covered by a period of less than two generations, and yet it has advanced from the rude operations practised by the blacksmiths and barbers to one of the most scientific and exact of the specialities of the healing art. Scientific dentistry had its birth in the United States of America. This country has the proud distinction of having organised the first school for the teaching of dental science, and the establishment of the first periodical journal devoted to the interests of dentistry, whilst very many of the most useful appliances and scientific methods have originated on this side of the Atlantic." He would now beg to alter his amendment, and put it as follows:—"That the British Dental Association do not send delegates."

Mr. Holford seconded the amendment.

The President said, after having heard part of the circular read, he doubted if any country would care to send delegates to a body of men holding such views.

The amendment was then put and carried by 33 votes to 3.

After certain formal business the meeting terminated.

In the afternoon an "At home" was given by the President, Mr. W. H. Breward Neale, in the Edgbaston Assembly Rooms, which formed the last gathering of the meeting, which proved most successful throughout.

The Museum.

It was by no means an easy matter to get together a goodly collection of cases and specimens to form a museum so soon after the Manchester meeting, where nearly all subjects were treated so exhaustively. It was not thought advisable or even possible to repeat the same subjects. Thus the catalogue showed the introduction of some novelties so far as museums are concerned. Notably, that of (*a*) Ancient and Modern Mechanical Dentistry ; (*b*) Instruments and Apparatus, devised, and for the most part made by dentists. These two subjects were well represented. Probably no such collection of specimens of mechanical skill has been got together before. This department was open to all grades, and side by side with examples of the very best work were specimens of the very worst. It was more than interesting to note the splendid work which some of those of a generation past could do, and to observe exemplified the strides which have been made in mechanical dentistry, and the facilities of to-day in constructing dentures. A silent history of progress from the carved ivory plate and teeth down to the gum enamel work. This department contained also specimens illustrating methods. Among these might be noted electro-typed copper surfaces on impressions for obtaining a hard surface when the model was cast. The method was shown to be of advantage in many ways.

Carved ivory work was represented by a really extensive collection, in many specimens the adaptation to ivory plates by means of rivets, pins, and bands of natural teeth. Modern prejudice would scarcely tolerate this, but the appearance, as shown by these cases, would seem to be much better than some work that is worn to-day. An interesting old relic was "The first Childs' vulcanizer, used in Warwickshire," a thing of colossal dimensions. Vulcanizing in those days must have been a serious business. The collection also contained a specimen of continuous gum work, with a notary date——1796. It would be impossible to enumerate here anything like all, or even a small proportion of the items of this section, as some fifteen pages of the catalogue was devoted to it. The subject was a most interesting one, and it is to be hoped that this exhibit may be repeated again at some future meeting, for as an education, it can never lose in value. No one could glance through the miscellaneous collection of dentists' self-devised and constructed instruments without picking up hints. The workman is of course the best judge of what tools will be useful to him, and of how they should be made, and as the dentist is perhaps the best all-round handy man it might well be expected that there would be every opportunity of picking up any number of useful ideas. Among the contributors to this section might be mentioned the names of Mr. George Brunton, of Leeds, and Mr. H. C. Carter, of London. Whilst those from the students of Leicester Square Hospital added greatly to the value of the exhibit. "Cases of irregularities mechanically treated" was very well represented. A number of models being sent by our American confrères. No notice of the museum could be complete which did not mention Mr. George Cunningham's interesting exhibit illustrating proposed courses of instruction at an "Institute of Dental Technology." Specimens of progressive work done by pupils and apprentices for the purpose of training the eye and the hand, and for teaching the minute details of mechanical work. Together with these was a pamphlet explaining the project, and in the absence of any better method, or rather one might say as long as the dentist is responsible to no one for the teaching he affords his pupils, such a system seems almost a necessity if the dentist of the future is to be thorough. Mr. Cunningham has given some considerable time to this subject, and we can only hope his enthusiasm may have its reward. Taking it altogether, the museum if not very extensive was calculated to be of the greatest practical value to those who availed themselves of the opportunity of a careful examination. There was at any rate not enough to tire one, whilst the visitor had ample opportunity of thoroughly studying what was there set out.

GOSSIP.

The pressure upon our space owing to the report which we have been enabled to give at some length of the interesting meeting of the British Dental Association at Birmingham, has obliged us to forego the purely editorial matter for this month, so we appear without a leader.

There are, however, some matters which must be noticed, and first comes an appeal sent to us by Mr. Rushton, of 32, Harley Street, to which, we trust, there will be a ready and prompt response.

Mr. S. Minitt, whose death under the most painful circumstances recently occurred, has left a widow and seven children almost unprovided for. His life assurance policy will have to be expended in paying off the debt remaining on the purchase of his practice. Votes and influence are earnestly solicited for his eldest girl, who is a candidate for admission to the London Orphan Asylum. A subscription has been started by his friends, and any sum will be gratefully received and duly acknowledged in aid of this most distressing case by Mr. F. E. Cutts, 28, Old Burlington Street, W. or by Mr. William Rushton, 32, Harley Street, W.

A Grand Concert, we are asked to state, will be given on Tuesday, June 6th, at St. James's Hall, under the auspices of the Students of the Dental Hospital of London. The proceeds will be given for the building fund of the new hospital, and it is hoped a large sum will be taken. The concert is under the immediate patronage of Royalty, and among the names of eminent artistes who have kindly promised to aid, we notice those of Lady Hallé, Madame Frickenhaus, Mr. Ben Davies, Mr. Watkin Mills. Sir Joseph Barnby directs, and the Guildhall Choir of 250 voices is to be in attendance. Tickets can be obtained from the usual agents, or from the honorary secretaries, Messrs. Pascal-Taylor and W. F. Mellersh, at 40, Leicester Square.

Dental Students' Dinners.—We were sorry, again, through want of space, to give detailed notice to two interesting functions when they occurred, and which are now ancient history, viz., the dinner of the Edinburgh Dental Students and the London Dental Hospital Students. A feature which was present in both, and which was first adopted in Edinburgh, was a most artistic and clever menu card drawn quite "up to date" with *pour rire* little sketches topical to the occasion. Mr. Fred Page, the Edinburgh man of humour, will forgive us if we say his *page* is, to our mind, of great merit, and if the dinner was as good as the menu card the Students of Edinburgh may congratulate themselves and Mr. Fred Page.

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Original Communications.

"SOME OPERATIONS ABOUT THE MOUTH."*

By A. B. D. Densham.

Mr. President and Gentlemen.—As the time at my disposal this evening is of necessity limited, I shall be able only to describe the various methods of surgical interference required for the treatment of two or three of the more common pathological conditions of the oral cavity, which we as dentists may meet with. I had at first intended to bring forward a few practical points upon tonsillotomy, the removal of adenoid growths from the naso-pharynx, and allied minor operations which usually fall to the lot of the general surgeon; but although such subjects must have a considerable interest to us all, as being so close to the field of our own operations as dental specialists, I have been advised that the consideration in detail of such operations as may be entirely within our own sphere would be more worthy of discussion here.

I should first give a warning against the use of the term "operation" before patients, except when the gravity of the procedure warrants the use of the word; for even such a simple matter as the removal of an epulis, when dignified by the name of an operation, brings before the imagination of a nervous patient ideas of death under chloroform, and other dreadful possibilities.

I have found it quite impossible to arrange the subject in any regional or pathological classification. I must ask you therefore to allow me to discuss each operation upon its own merits.

Taking first the subject of alveolar abscess, the treatment of this condition resolves itself into the removal of the cause of inflammation, and the production of a free outlet for inflammatory exudations which may be already present. In the majority of cases the removal of the offending tooth, if lawful, meets both requirements ; but in cases where pus has perforated the alveolus and is burrowing between the periosteum and the bones, an incision into the fluctuating swelling is distinctly indicated, both to relieve pain and to prevent further separation of the periosteum. In opening an abscess here, as elsewhere, a free incision must be made, the small incisions so frequently adopted by timid operators, by allowing the retention and re-accumulation of pus, delay repair much longer than is necessary. The incision is best made with a scalpel or a small bistoury ; if the abscess to be opened is far back in the mouth, the concentration of the operator's attention upon the point of the knife may lead to unintentional incisions of the lips and angle of the mouth with the heel of the knife ; this is best guarded against by protecting the blade of the knife with ordinary soap plaster wrapped around it, leaving only as much of the point of the knife uncovered as is necessary for actual cutting. The abscess must be opened at its most dependant part, so that gravity may assist in the maintenance of good drainage. The direction of the incisions depends, of course, to some extent upon the position of the abscess ; but from the nature of the oral cavity it is almost invariably made longitudinally, the point of the knife being extended at the furthest limit of the intended incision and the abscess freely opened by cutting forwards. The edge of the knife should always be directed towards the bone and away from the soft parts, so as to avoid important structures ; for by keeping the edge directed towards the soft parts, the facial artery has more than once been wounded in opening abscesses in connection with the lower molar teeth.

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* A paper read before the Students' Society, Dental Hospital of London.

In those cases of alveolar abscess in which, owing to the position of the apices of the fangs beyond the buccal reflection of the mucous membrane, the pus points towards the face or chin instead of towards the mouth ; also where the same effect is produced by the injudicious application of poultices, it is advisible to make a skin incision as soon as it is evident that an external opening is inevitable. The incision in such cases must be planned to coincide as far as possible with the general direction of the lines of expression upon the face (for early incision through healthy skin, results in a more or less linear cicatrix) and so saves much of the disfigurement which would be inevitable were the abscess allowed to open spontaneously. It is very rarely necessary to make an external opening, except in a few cases of abscess in the connection with the lower incisors and molars, in such cases the burrowing of pus is assisted by gravity, and unless timely exit is given to the pus, extensive tracts may be undermined owing to the arrangement of the cervical fascia ; some instances are on record where pus primarily arising from an alveolar abscess has been evacuated even above the clavicle. This must be prevented by incisions beneath the jaw, so placed that the resultant cicatrices may be hidden by the jaw. Having divided the skin and superficial fascia, the position of the facial artery being borne well in mind, the pus may be evacuated by pushing a pair of dressing forceps into the abscess and then separating the blades by opening the handles ; by this means free exit is given to the pus through a dependant opening and an unsightly puckered cicatrix upon the cheek is avoided. In all cases, but more especially in chronic alveolar abscesses, after having made a free incision it is advisable to pass a finger into the cavity to ascertain the condition of the bone, as (when possible) a finger is a much better probe than any metallic substitute.

Some authorities maintain that in large abscesses in connection with the molar teeth, incisions transverse to the suture are preferable to longitudinal ones, in that the gaping of transverse incisions is more favourable to free drainage. To make such incisions the cheek must be held well out, and the cutting must be done towards the bone from the cheek ; here it is almost imperative that the major part of the blade should be guarded.

In all cases, after having secured a free opening into the abscess, and evacuation of its contents, the cavity should be irrigated with an antiseptic fluid, and then plugged with a single strip of antiseptic lint.

Passing on to the treatment of cysts in connection with the teeth, we may first consider dentigerous cysts. The treatment of these cases is obvious, and is attended by very good results. It consists in evacuating the contents of the cyst, extracting the tooth or teeth embedded in it, and when necessary, that is to say, where there is considerable expansion of the jaw, removing some portions of the expanded bone. The operation should be undertaken as early as possible, as delay gives rise to increasing expansion of the bone, and so necessitates the removal of more bone than is required at an earlier period.

All cutting should be, if possible, done within the mouth ; if the natural size of the mouth does not give the operator sufficient room, more space may be gained by dividing the lip in the middle line ;

this proceeding is to be deprecated unless it is a matter of absolute necessity. The mucous membrane over the expanded wall is incised with a knife, and as a rule it is possible to make an opening into the cyst with an ordinary scalpel, which easily cuts through the thinned and expanded bone; but in some cases, where there is inversion of the retained tooth or teeth, the expansion is directed away from the alveolar border, and then the opening has to be made through bone of greater thickness; for this bone forceps, a small saw, a trephine, or a drill in the burring engine may be used according to the necessities of the case. Having obtained free access to the cyst, the embedded tooth or teeth must be seized with dressing or sequestrum forceps and removed. The teeth will usually be found at the base of the cyst, that is to say at the portion of the cavity farthest removed from the most expanded wall. If there is a considerable amount of thin expanded bone in the walls of the cyst, the removal of portions of this bone will expedite the process of repair. In some cases which have been treated in this way alone the persistence of a serous secretion has necessitated further operation, it is therefore better at the first sitting to scrape the interior of the cavity with a sharp spoon, in order to remove as thoroughly as possible the secreting surface. Having thus thoroughly excavated the cyst, the cavity must be packed with a single strip of lint dipped in an antiseptic and allowed to heal by granulation.

The treatment which is most efficacious for the cure of cysts in connection with the roots of carious teeth, is very similar to that for dentigerous cysts. Some people recommend simply the removal of the tooth causing the trouble, and the enlargement of the opening through the alveolus into the cavity of the cyst; but although this treatment might be successful in a few cases, it would not as a rule be good treatment, especially in the lower jaw, for here the existence of a cavity having exit only by means of a small opening at its summit would certainly favour retention and decomposition of secretions, predisposing to inflammation and suppuration in the cavity, and further serious trouble in the bone. Simple evacuation of such cysts by means of an evacuator and subsequent crushing in the walls, is almost invariably followed by re-accumulations, necessitating further operative procedures. By far the most general method of treatment in these cases, and the one which appears to be the safest and most successful, is to remove the exciting cause and then freely open the cyst and to allow it to granulate up from the bottom.

The cyst should be opened in the way described for dentigerous cysts, and having secured a free opening into the cavity and evacuated the contents, the lining membrane must be thoroughly destroyed by the sharp spoon, or by the application of a strong solution of chloride of zinc or nitric acid. It is not absolutely necessary in these cases to remove the whole of the expanded wall, generally it is sufficient to remove only enough to give free access to the cavity and to crush in the remainder; the resultant cavity is then treated in the manner described above when dealing with dentigerous cysts.

Passing on to the consideration of *Empyema of the antrum*. So much has been said and written about this condition, that it will perhaps be better to give merely the outlines of the methods of operative treatment.

The indications are to remove all sources of irritation, to evacuate pus, to maintain free drainage, and to prevent decomposition of secretions. The position in which the antrum should be opened varies according to circumstances. As a general rule all dead teeth and unhealthy roots on the affected side should be removed, and the socket through which pus escapes should be enlarged, usually the socket of the first molar is chosen when none of the others communicate with the cavity, for this tooth is the most frequent cause of empyema, and also it occupies the most dependent position in the floor of the antrum. To enlarge the opening through this socket a large trocar or a small bone guage is generally used, and with ordinary care no harm can be done with these instruments. As a considerable amount of force is necessary to perforate the bone, when this is accomplished the instrument is apt to slip further than is intended and may be driven against the roof of the antrum, or even perforate that bony process and wound the orbit, to guard against this untoward accident, the operator's index finger should be firmly held against the shaft of the naked trocar about three quarters of an inch from the point, thus however suddenly the perforation is completed, the finger checks further progress of the point of the instrument. The opening thus secured should be enlarged by rotatory movements of the trocar, or by a reamer. It is of the greatest importance to secure a free opening; an error that is frequently made in the treatment of these cases is the production of a small aperture only, this is insufficient for adequate drainage and a small opening will not allow of the passage of flakes of inspissated pus of any size, besides preventing the use of injections in sufficient volume to be of any value. Having in this manner opened the antrum and evacuated a certain amount of pus, the cavity should be thoroughly flushed with a fairly forcible stream of antiseptic fluid, in order that any pus which may be collected in the dependent portions of the cavity, or in the loculi sometimes present in the floor, may be thoroughly removed. If a strong antiseptic has been used, the cavity must then be flushed with a weaker solution to prevent absorption. When empyema of the antrum is associated with necrosis of some portion of its bony wall' the pus evacuated has a very characteristic odour which is easily recognised by anyone who has ever smelt pus in connection with dead bone. When this odour is detected the cavity of the antrum should be carefully explored with a probe in all directions in order to ascertain the position of the bare bone, if it is found that the dead bone is loose its removal should be affected by means of sequestrum forceps with long thin shanks, or by a sharp spoon with a thin shank which can be adapted to any required angle.

Another position in which the antrum may be opened is through the base of the malar process of the superior maxillary bone, above the alveolar process. This method is especially applicable where a larger opening is required than can be made through the socket of a tooth, where all the teeth on the affected side are sound, in edentulous cases where the alveolar process is very dense, and in cases where the removal of a foreign body is the aim of the operation. This may be affected by everting the cheek, incising the mucous membrane and exposing the bone above the position of the second molar tooth, and then perforating here with a gimblet, a stout trocar, or a pair of strong scissors held closed in the hand and bored into the bone with a rotatory movement. By this method it is sometimes difficult to tell exactly when the cavity of the antrum is reached, it is therefore necessary to withdraw the instrument occasionally and ascertain the state of affairs by means of a probe ; further procedures are as before described.

When the operation is undertaken for the removal of a foreign body, the antrum may be opened in the way described and the effect of injection of a stream of warm water at a moderate pressure may be tried, if this fails to dislodge the offending body, the cavity must be thoroughly explored with forceps of various shapes, or a rubber cup attached to a soft wire stem may be found very useful with the same intent. The subsequent treatment of these cases during the process of repair needs no mention in this paper.

We will next consider the subject of *Epulis*. Here the treatment is fairly simple, it may be said generally that it requires early and complete removal with the knife, and in the majority of cases it also requires the removal of contiguous teeth and subjacent bone. The following remarks must be taken only as applying to the simple fibrous form of epulis, myeloid and malignant epulides are more usually referred to the general surgeon than to the dental practitioner. Where a fibrous epulis limited in extent exists between two perfectly sound teeth whose removal is to be deprecated, it will be well in the first operation to try the result of free incision with a scalpel, removing no more of the adjacent alveolus than can be accomplished with the knife, the bone close to the base of the tumour, being spongy and vascular, is easily removed by this means. If after this treatment the condition recurs, as it frequently does, the removal is necessary of one or both of the contiguous teeth as judgment directs; the affected alveolar process must then be freely removed with bone forceps or a gouge. It is rarely necessary to remove a large amount of bone, in some instances however, the growth starts deeply in the socket of a tooth and then the removal of a V-shaped portion, including the whole of the alveolar process, is necessary. This is best effected by means of a Hey's saw. The removal of more bone than is necessary for *thorough* treatment is bad practice, and the disease very rarely involves more than the alveolar process of the maxilla. It must be borne in mind that the removal of the whole of the alveolar process at one part of the lower jaw is not unattended by risk of subsequent fracture at that spot, and the after treatment must be directed to protection of this part until healing is complete. This operation is sometimes complicated by free hæmorrhage, this however can be controlled by compresses applied in the same manner as for hæmorrhage after extraction of teeth ; the actual cautery is very efficacious but the consequent slough is likely to become septic.

Passing on to lancing the gum over an erupting tooth, is a small operation which requires no very detailed description. Having decided that an incision into the tense tumid gum over the crown of an erupting tooth is advisible, it is best done (in the case of molars) by making two diagonal cuts from behind forwards, which, when completed form a cross with the centre over the centre of the erupting crown. Each incision must be firmly made down to the enamel of the subjacent crown.

There are a *few points* in connection with removal of sequestra after partial necrosis of the jaws which are worthy of mention. It is noticed clinically that sequestra in the lower jaw do not become loose so quickly as they do in other situations, the practitioner should therefore not proceed to operate immediately the presence of dead bone is recognised ; as soon however as it is ascertained that a sequestrum is quite loose it should be removed by incision of the soft parts ; if this is done it is possible in some cases, especially in necrosis following exanthematous fevers, to save the crypts of the permanent teeth, for if it is left to nature to throw off the dead bone, the prolonged inflammation of the parts and ulceration of the gum is liable to cause the death of the bone containing the crypts of the permanent teeth ; or a similar result is brought about by disorganisation of these crypts. The consideration of the action of the strong muscles of mastication attached to the lower jaw also demonstrates the inadvisability of too early operative interference. Hasty interference might disturb the relations of the new-formed supplemental bone called by some the "natural splint," and by allowing the separate action of the strong antagonistic muscles might lead to permanent displacement of the bony portions of the maxillary arch. It may be said then, that for some time the treatment of necrosis of the jaws should be expectant only. When the presence of dead bone is diagnosed, and there is a collection of pus beneath the soft parts, this pus may be with advantage evacuated by *incision* of the soft parts in the mouth, thus forming an artificial sinus ; this prevents extensive undermining of tissue. Then with a view to further operation at the right time, the patient should be placed under the most advantageous conditions possible by means of good hygiene, nourishing food, and general tonics ; the prevention of decomposition of pus should be secured by daily syringing the sinus with antiseptics, and the frequent use of antiseptic mouth washes. When the sequestrum is found to be loose the time for operation has arrived.

It must be laid down as a general rule, that, when possible, all dead bone should be removed through the inside of the mouth. In the upper jaw, where the necrosis seldom extends beyond the alveolar border or palatal process, this may always be readily done.

In the lower jaw, however, when the case does not come under observation until sinuses have already formed, the question as to whether the dead bone should be extracted through the mouth, or from without by incision through the cheek, must be determined, partly by the position of the sinuses, and partly by the situation and extent of the affected bone. This may be ascertained by probing the sinuses. If these are in the cheek, or the side of the neck, or under the angle of the jaw, it is usually an indication that either the whole of the corresponding body or ramus of the jaw are affected, or at least the posterior and outer parts.

Under these circumstances extraction of the sequestrum is best affected, by slitting up the sinuses parallel to the line of the jaw with a probe-pointed bistoury. If it is found on probing that the sinuses lead almost straight down to the dead bone, the junction of two sinuses in one incision gives ample space for the removal of the sequestrum. Having carried the knife through the soft parts down to the bone, the sequestrum is exposed at the bottom of the incision ; this may be tilted out of the bed of granulations in which it lies, by means of an elevator ; it must be seized by dressing forceps, or special sequestrum forceps with serrated ends ; if then it is found that it can be withdrawn easily this should be done, if however it is found that the incision is not sufficiently large to allow of the passage of the sequestrum, rather than enlarging the incision the sequestrum should be cut into several pieces by means of cutting pliers, and each piece removed separately. On no account should force be used to drag a sequestrum through an incision in the soft parts of inadequate size, as the inevitable laceration of the tissue is almost sure to be followed by sloughing and excessive cicatrisation. The bed of ill-formed granulations in which the sequestrum lay must be carefully examined for any concealed spicules of bone, and this tissue thoroughly scraped away with a sharp spoon. The cavity must then be plugged with a strip of antiseptic gauze in order to insure granulation from the bottom.

If however there is no external abscess or sinus, and if the gum is stripped up and perforated, no external incision is necessary. If there is a single sinus, this may be taken as the central point of the incision which extends right down to the bone, if there are two sinuses they may be united in one incision as before described ; the further steps of the operation are the same as those previously mentioned.

I will not now detain you by the description of any other operations, as I feel sure that I must have already omitted many important points which other gentlemen can put before us; and I know also that there must be many here who will be able to tell us of many practical improvements, gathered from their own experience, in the methods which I have endeavoured to describe to you theoretically.

ON SOME WAYS OF MANIPULATING THE FILLING MATERIALS.

By Mr. HALLIDAY.

(Concluded from page 203).

It is not necessary to see the patient again after an amalgam has hardened, as a good amalgam so treated is hard enough to polish at the time it is inserted, and hard enough for mastication in ten minutes if the plug is small, or in fifteen if large.

The best and proper way to mix amalgams is to weigh the proportions. To the use of too much mercury is to be ascribed the discoloration of the plugs, and the spheroidal tendency of amalgam. It is quite remarkable Fletcher says, "The carelessness displayed in mixing an amalgam, and we can safely assert that many of the failures we see are due to want of attention in that point. Mercury should be used as sparingly in an amalgam as solder on a gold plate. An excess of mercury once added can never be squeezed out, the alloy containing permanently nearly double the amount necessary, and this if it does nothing else causes very greatly increased discoloration of the plug.

The slight amount of contraction or change to spheroidal tendency occurs just before hardening, and if the edges of the filling are carefully condensed with a plugger after the amalgam is nearly hard this change of shape can be almost, if not entirely, compensated for. This is an important point and should always be attended to. When excess of mercury is used it always works to the surface producing an unequal plug and largely increased spheroidal tendency. Fletcher says that if the cavity cannot be kept perfectly dry all through the process of filling, it is better to work under water all through. If mechanical contact is not obtained between the walls of a cavity and a plug, the plug if water is present loses its shape in proportion to its softness and the time it remains plastic, this loss of form being caused solely by the power of liquids to force themselves into minute crevices against the power of gravity and in the face of considerable pressure.

Flagg's Method.—Weigh proportions of filling and mercury, mix in mortar and rub in the hand. If the cavity cannot be kept dry he prefers pure water made slightly alkaline by carbonate of soda to wet it with rather than saliva. He directs the amalgam to be rolled into a spindle-shaped mass, placed in position, and crushed into the cavity to secure it in position, it must then be tapped with light blows from an appropriate instrument, till placed in accurate apposition with cavity walls. He thinks this method better than the burnishing method, malleting not only not necessary but rather objectionable, as tapping gives far better results than forcible blows, the consistency of the amalgam should be such as to allow of perfect adaptation of filling to cavity walls by tapping with light blows. Each piece should be tapped on to the other so as to produce perfect union. When the cavity is filled this way a last piece should be enveloped in chamois skin and squeezed hard, and the wafer thus made be laid on the filling. By crushing this wafer into a powdery mass and tapping these in union with a softer mass, setting is hastened and the edge strength, density and whiteness of filling much increased. When cavity is full it is shaped by trimming, or if not too hard, smoothed by piece of soft pine stick. When set or nearly so, burnish up and down the surface, not across as it gives it a white appearance.

Dr. Kingsley recommends filling the cavity $\frac{1}{3}$ or $\frac{1}{2}$ full with amalgam and finishing with gold, drying off the mercury thoroughly with tin. At first the gold absorbs the mercury, but that soon ceases, and the gold packs cohesively as well as usual. The amalgam will be hard enough to finish by the time all the gold is packed. The advantages claimed are that the gold takes up the excess of mercury preventing shrinkage, such a filling is in better condition to make a perfect flush edge at the cervical border and though the amalgam dissolves, neither the tooth nor the gold do so.

Dr. Bonwill's method.—Separate the teeth, cut the cervical edge as near the gum as possible, cut well away the labial and lingual walls to expose the edges, cut grooves in the sides for retention. Mix sufficient amalgam to form a firm plastic mass. A small portion is placed in and between the cavities and worked in first with a burnisher then pressed home by placing on it a pellet of bibulous paper and applying considerable pressure with a blunt-pointed steel instrument, more is inserted and condensed in same way till the cavity is full, finally great pressure is made through the pellet of paper by squeezing under a soft india-rubber buffer about half an inch diameter slightly projecting from an iron ferrule fixed in a wood handle. The fillings, or rather one only at present, are cut away free of the bite to prevent dislodging; roughly trimmed and shaped at the cervical edge with the steel instruments, but not divided at the surface. Subsequently when the amalgam is completely set a division is made with thin band saws and the fillings are shaped with discs and corundum points and conical fissure burs at the cervical edge and polished. It is said that this way is quicker, because two cavities can be filled together, thus saving time, and that by the considerable pressure on the bibulous paper, mercury is squeezed out at the sides and crumbling, a common trouble with amalgam, is avoided.

Some say that the greatest amount of contraction goes on during the first third of the time it takes to set, after being mixed, and recommend leaving the amalgam to stand for a while before using it, the amount of contraction being thus lessened one-half.

The use of granular amalgam which takes up sufficient mercury to weld it in a solid mass is the correct way to ensure cleanliness of appearance.

Amalgam may be packed by rubbing it bit by bit against the walls of the cavity, and burnishing each bit well into the last so as to get thorough union till the cavity is full. Dr. Flagg says this is not so good as tapping it in, but Mr. Fletcher approves of this way.

Amalgam fillings may be dried by burnishing either tin or gold cylinders on them. Tin when used is very liable to leave flakes on the surface of the filling which renders it frequently necessary to smooth the surface up again, but gold cylinders leave a clean surface.

Some prefer to pack tin cylinders at the cervical edge of an amalgam filling to make sure of the most vulnerable point, this as filling part of the cavity with gutta-percha is necessary with copper amalgam, when the filling is near the gum margin, as this amalgam wastes there; and in large amalgam fillings some operators put pieces of old hard amalgam to lessen the bulk of material which will shrink.

Osteo and Amalgam.

Osteo and amalgam may be combined, and form a hard mass when set, which when soft is almost as sticky as osteo. The amalgam is mixed dry for this, in fact powdery, as if mixed wet when incorporating it with the osteo, the surplus mercury works out ; and the osteo is mixed thinner than usual, and the two are then mixed in the proportions of one-third to one-half of amalgam This will adhere to the sides of the cavity (and to the instruments if not greased, in this respect it is worse than osteo) as well as osteo, but because of the solubility of the osteo it should always be covered with a layer of amalgam, which should be burnished on before the mixture is quite set, and it will then adhere.

For crown cavities dry phosphate powder may be mixed with alloy filings and then mixed with the liquid in the ordinary way to a putty-like mass. It is claimed that as the osteo washes out, and leaves a rough surface, the filings will be flattened by attrition till when the whole surface becomes metallic it may be burnished and the osteo will no longer waste, but I think that it would be far easier to mix the amalgam and coat it at the one sitting.

Gutta-Percha.

Gutta-percha of the best make consists principally of pure gutta-percha and oxide of zinc. Gutta-percha has extraordinary permanency, but it has two demerits of note, one being its inability to resist mastication, the other a considerable degree of shrinkage permitting leakage and subsequent clouding of the tooth.

The first objection may be overcome by only using where there is little or no bite upon it, the second has been found practically insurmountable.

It has been recommended to coat the cavity with a solution of gutta-percha before filling, but this rather makes matters worse than better, because the shrinkage from evaporation proved even worse than that in cooling, although it allowed easier introduction of the filling, it also made the material round the edges porous from the evaporation of the solvent. For this reason the surface of permanent gutta-percha fillings should never be wiped with chloroform. A little eucalyptus might be used instead if liked, but is not necessary.

Permanent gutta-percha should always be softened by transmitted heat, being held on the point of an instrument, the shank of which being heated an inch higher up till the mass is soft, it may then be passed once through the flame. If it is overheated it is spoiled entirely for satisfactory results.

Although very good results can be obtained when it is impossible to keep the cavity perfectly dry, to get the best results it should be perfectly dry. In such a case where it is much wet it is easiest to introduce the material in one piece, as it is impossible to make small pieces adhere to each other when they are wet. When the cavity can be kept perfectly dry and the rubber is on, the gutta-percha should be used in very small pieces, each worked into place round the margins of the cavity and held there until sufficient is introduced to make it keep in by itself. When the margins are all covered the floor may be filled in. Permanent gutta-percha should be packed with warm instruments. By packing in small pieces, the pieces as they contract being held to the edges, the filling has a better chance of being water-tight than when introduced in bulk. The surplus is trimmed off with very hot instruments, always working from the centre to the edges, but if put in small pieces there should not be much surplus. Although the cavity and material should be kept dry during the process of filling, when the time for trimming off comes, a little moisture on the surface of the filling is beneficial, as it prevents the liability of the hot instrument sticking to it.

Hill's permanent gutta-percha will adhere to walls, being sticky, but all the other makes do not. Cajeput oil is supposed to help the introduction of the filling, but it is unnecessary in a dry cavity. Fletcher says the cavity for a permanent gutta-percha should always be varnished with copal, as it prevents the leakage, but whether it does this or not, it lessens the clouding which appears after the filling has been in a long time.

Some recommend that after trimming with a hot burnisher, the surface should be suddenly cooled with water, and if there are now any overlapping edges and it is an approximal cavity, a piece of floss silk dipped in chloroform should be passed between the teeth and worked backward and forward, which will remove them.

Dr. St. George Elliot says that the red base-plate gutta-percha should be packed in one piece, as there is much greater leakage with this if packed in small pieces. He says this should be forced into every part of the cavity with a broad flat plugger.

Mr. Hutchinson recommends heating temporary gutta-percha till quite soft, then plunging in chloroform to cool and make the surface more sticky, and it can more easily be inserted.

I repeat now what I mentioned in speaking of amalgams, that wherever there is a bevelled edge to a cavity for gutta-percha or amalgam the filling will not be water-tight at that point.

OXYCHLORIDE OF ZINC.

The chief uses of oxychloride of zinc are for lining cavities to be filled with amalgam or gold, to strengthen frail walls, it is antiseptic, decay never being seen under oxychloride fillings, for bleaching discoloured teeth, and where the pulp is protected for obtunding sensitive dentine.

To mix oxychloride.—To sufficient liquid add about an equal amount of powder. Work small portions of powder into a soft cream with a stiff spatula, gradually adding more powder till it is all mixed, carefully mixing each part smooth before adding more powder, until a decidedly putty-like consistence is obtained. It should not be kneaded. If used for lining the cavity, place in position with the point of the spatula, and press into position with pellets of cotton-wool, taking care not to let the fibres of the wool be entangled in the mass as it is setting. It should be introduced in small portions. If the cavity is to be filled with gold, let the cement have about a day to set, if amalgam, it should be introduced before the oxychloride is quite set.

A very thin layer of oxychloride will cause little, if any, pain, which results sometimes from a bulk of this material, even in pulpless teeth. By introducing in small portions most of its shrinkage is disposed of, and to set it hard requires from fifteen to twenty minutes.

If used to obtund sensitive dentine, a layer of gutta-percha or oxysulphate should be placed over the pulp, but where the pulp is protected it is the most comfortable of all fillings.

OXYSULPHATE OF ZINC.

As a filling oxysulphate of zinc is not so useful as oxychloride, being more soluble. Oxysulphate should be mixed to little more than a milky consistence, never thicker than ordinary cream when used for pulp capping. It should then be worked with the spatula until it begins to give the least perceptible evidence of thickening, when it should be taken on the end of a spatula and placed accurately in position by being pushed off by a moderately fine probe. It should not be worked after it ceases to flow under this instrumentation comparatively easily, or a very small pellet of wool dipped in it directly it is mixed, and placed accurately in position being readily secured in place by touching the edges with small smooth-ended instrument, or it may be taken up when just mixed on a spoon excavator, and if the convex part be placed next the pulp, the fluid will readily flow off the instrument wherever wanted. This takes five to fifteen minutes to set hard. It may then have oxychloride side linings for gold amalgam or gutta-percha or all oyxchloride or phosphate fillings. It may be mixed with oil of cloves for pulp capping which slightly hastens its setting.

Phosphate of Zinc.

Dr. Flagg says that the legitimate uses of zinc phosphate are lining cavities, strengthening frail walls, largely filling large-sized cavities which are to be filled with gold or amalgam, and for increased adhesion of fillings, where there is weak retention power in the cavity itself.

To mix zinc phosphate.—A portion of fluid should be poured on the slab and more than sufficient powder poured out near it. A bulk of powder about equal to bulk of fluid should then be mixed with the fluid gradually but quickly. This should make the mixture of a thick creamy consistency, then a little more powder should be added and quickly and forcibly made into a mass by thorough working with spatula. The mass should be of putty-like consistence, though some varieties are directed to be made stiff. The mass should then be scraped up on a spatula and taken from it by the thumb and forefinger. A good zinc phosphate requires considerable force to take it from spatula. It should then be kneaded, not rolled, by two or three gentle motions of thumb and forefinger. The warmth of the fingers makes the mass slightly more plastic, and kneading produces a more homogeneous mass. This should be now rolled into an oval and elongated form for filling. It should be introduced by round or flat-ended pluggers, the pressure to condense it being on the face of the material, if instruments be touched on an oil pad it will prevent the osteo sticking to them and so being liable to drag. Superfluous portions should be worked so as to overhang or be cut off by the margins of the cavity, so that they will break off sharp and leaving a clear edge to the filling at the cavity walls. This gives a harder surface to the filling than if cut down with emery discs.

At the cervical edge the cavity should be guarded with gutta-percha as zinc phosphate wastes at the cervical edge, though not so much as oxychloride. It should be kept dry at least five minutes after introduction into the cavity, if possible, and then varnished, if it cannot have five minutes even, varnish at once, but give varnish time to dry. If it is required to be adjusted to the bite, give half-an-hour to dry and then cut down with either a perfectly dry or a very wet sharp instrument. A much better surface is given to the filling if it is burnished when thoroughly hard.

Zinc phosphate is recommended by some as a pulp capper, because it does not irritate the pulp, but a material may not be irritant and yet capable of devitalizing the pulp. Dr. Flagg and Dr. Miller agree in believing zinc oxyphosphate to have bad results on the pulp, even when the pulp is intact, and that in course of time they induce a diseased condition, and eventually death of the pulp, and although this is not absolutely proved, yet the probability is so great that it renders the precaution necessary of putting either a layer of gutta-percha on the floor of the cavity, or oxysulphate, or anything that will serve the same purpose, and only using it alone in very shallow cavities.

In mixing, osteo powder should always be added to liquid, not liquid to powder. A saturated solution of sulphate of zinc used with the powder of the oxychloride cement is recommended for the foundation of fillings and setting crowns as it becomes very hard.

For temporary teeth some recommend thin oxyphosphate mixed with a thick solution of gutta-percha.

And now, I must thank you gentlemen for the patience with which you have listened to such a long dry paper, and I hope you will give the subject the discussion it deserves.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE USUAL MONTHLY MEETING of the above Society was held on the 1st. ult., the chair being occupied by Mr. R. H. WOODHOUSE a Vice President, in the absence of the President.

The minutes of the previous meeting were read and confirmed.

Mr. C. SUTCLIFFE, L.D.S.I., was nominated, and the following gentlemen were duly elected members of the Society:—Messrs.

P. Stewart Durward, Jas. Leslie Fraser, L.D.S.Eng. ; G. R. Shiach, L.D.S.Eng. ; A. Hopewell Smith, L.R.C.P., M.R.C.S., L.D.S.Eng., and Jas. Stewart, L.D.S.Eng.

The LIBRARIAN (Mr. Ashley Gibbings) announced that in addition to the usual journals and transactions, he had received a copy of Mr. C. H. Balkwill's book, "The Testimony of the Teeth to Man's Place in Nature," presented by the author.

The CURATOR (Mr. Storer Bennett) mentioned that he had received a model of two small conical superior teeth. They were only remarkable for their very unusual situation, one being on the right side immediately behind the second lower bicuspid, and the other immediately behind the second lower molar. Mr. Bennett continuing, described a recent visit paid to the Zoological Gardens of Amsterdam, in company with his brother, during a holiday trip to Holland, and felt sure that members would be amply rewarded by visiting the Anatomical Museum ; he found the authorities most courteous and obliging. Among the many things which interested them was the skull of a female orang, which they brought back with them for the Museum of the Society ; the second molar seemed to be growing on the zygoma, and the diastema was very much larger than usual. One remarkable point about the specimen was that the upper canine was biting between the back of the first pre-molar and the second pre-molar. He also observed the jaw of a female deer, in which two very well-marked odontomes were present. Another case of interest was that of a living hippopotamus having a canine growing outside beyond the lip and cheek downwards with the antagonist broken.

The CHAIRMAN mentioned the subject of the International Medical Congress to be held in Rome, commencing September 24th next, and said that anyone who had not received a notice with reference to the Dental Section, might obtain it on application to the secretaries.

The SECRETARY then read the following reply received from Mr. G. Watson, of Edinburgh, to the discussion which took place on his paper (reported in our April issue).

"Mr. Bennett said that 'he took exception to the remark that the formation of dentine of repair after abrasion and erosion was a sign of the beginning of the end.' I meant this to apply more particularly to those nodules in the pulp tissue by the aggregation and coalescence of which the pulp is gradually destroyed, leaving the tooth in a condition very susceptible to disease. As regards

Mr. Mummery's remarks, I may say that I do not stain for micro-organisms; all the preparations were stained with picro or borax carmine. Mr. H. Smith said that he was rather puzzled about micro-organisms in connection with hypertrophy of the pulp. This pathological condition was caused, probably, not by organisms directly, but by the irritation of their products. Mr. Baldwin asks if it is possible by antiseptic dressing to get a carious cavity and exposed pulp into a thoroughly healthy condition. This all depends on the amount of exposure of the pulp, the length of time it has been exposed, and the condition of health of the individual. Recent exposures might be treated successfully, and the tissue brought into a healthy aseptic state, but if the pulp has been exposed for some time it is far better treatment to destroy. Mr. Ashley Barrett asks as to the precise cause of staining teeth. This I attribute to the blood in acute pulpitis being forced into the tubules and depositing colouring matter. Mr. Spokes wished to know as to the process of calcification of the exudates. I suppose he meant the formation of calcareous granules from the exudates. All that is wanted for the formation of such congregations is the presence of albumen and lime-salts. As regards the process of calcification, my slides ought to have shown that the process of calcification invades all the tissues of the pulp masses formed both round the vessels and nerves. The presence of pulp-stones indicates that the pulp is in process of calcification."

Mr. J. H. McCALL (Leicester), exhibited models of an unusual case of transposition, and a case of exaggerated cingulum. He then mentioned a case showing considerable ingenuity on the part of a patient. Some years ago a woman came to him to have some artificial teeth, but wished to explain before he did anything that she already had some of her own manufacture. On examining her mouth he found that she had fixed large pieces of brown gutta-percha to her teeth and stumps, with which she had managed to masticate for some years, though the pieces had to be renewed about every six months. He took models of her mouth before extracting the stumps, and these he had pleasure in presenting to the Society.

Mr. GEO. CUNNINGHAM gave a detailed account of similar ingenuity displayed by a porter on the Great Eastern Railway, but in that instance the material used was wood, and not gutta-percha. The man had lost his front incisors owing to accumulations of tartar, and was in the habit of shaping a piece of wood to fill the cavity.

Mr. Coxon, of Wisbech, stated with reference to the last case, that, but for having unfortunately mislaid the pieces of wood, he could have produced them.

Mr. Robbins mentioned a case within his knowledge where a woman living in the country, some distance from dental assistance, matched a front flat canine, which had broken away from its backing, with a piece of turnip. A fresh piece had to be carved every day, and she seemed to have some method of staining it. After several unsuccessful attempts she obtained a very good match.

Mr. Ackery, in the same connection, stated that some three or four weeks previously a man came to St. Bartholomew's Hospital to have some stumps removed. He said he was going to have some artificial teeth, and intended to make them himself. He had taken a cast of his mouth, reproduced it in plaster, made a mould in sand, and from that made an iron die. He was going to make a plate in silver, and was anxious to learn where he could get the artificial teeth.

Mr. J. Howard Mummery described, on presentation to the Museum, Dr. Carl Röse's models of the development of the teeth. He said that it would be remembered that he drew attention to Dr. Röse's investigations at the January Meeting of the Society. The results of these investigations seemed to demonstrate that the temporary tooth germ did not give rise to the germ of the permanent tooth, as had been generally supposed, but that the tooth-band grew obliquely backwards in the jaws, and after giving off a band dipping down to form the temporary teeth, continued growing backwards, and itself formed the permanent teeth. He thought that the models showed very distinctly that the permanent teeth rose from the portion of original epithelial lamina that had grown beyond and behind the temporary teeth, and that it could not be said that the permanent tooth arose from the neck of the enamel organ of the temporary tooth. It is only after birth that the end of the tooth-band grows beyond the first permanent molar in order to produce the rest of the teeth. It might be interesting if he gave a short explanation of the models. He had also photographed them, and had prepared a small set of lantern slides. The models had been prepared from microscopical sections by Born's system of modelling in which a solid model is built up in wax from a number of drawings of serial sections, drawn to the same scale and cut to a certain definite thickness. The details of the method were as follows :— Serial sections were cut with an automatic microtome until the whole of the object to be modelled was cut up. Each section is then photographed, care being taken that the magnification is the same in all, and that the order of the photographs is preserved. Sheets of wax were then taken, the thickness of each sheet bearing a definite relation to the magnification of the section; that is to say, if the section was magnified fifty times, the wax sheet must be fifty times as thick as the section. The outlines of the photograph were transferred to the wax plates, and each plate cut up with a knife along these outlines; the plates so cut were built up in their proper serial order, and the edges sealed with a hot spatula; an enlarged model is thus obtained corresponding in all its dimensions with the original object.

The following is a description of the models:—

Model 1. Mouth of a foetus 2.5 centimetres long. The opening of the mouth with part of lips and mucous membrane. In both jaws the tooth-band was shown as a curved ridge running in a backward direction. In the lower jaw this ridge showed several slight thickenings towards the front of the mouth.

Model 2. The same organs in a foetus four centimetres long, but the free edge of the tooth-band was thickened into knobs growing in regular intervals round one pulp, each in the shape of a bell. Previous authors have said that the pulp grows into the tooth-band, but it is essential to this theory that the papilla of the teeth do not push themselves at *right angles* but *sideways* towards the back, so that in the upper jaw they advance from above and behind, downwards and forwards. In each jaw the rudiments of the ten temporary teeth might be seen. The intermediate parts of the tooth-band had commenced growing irregularly in some places, the free edge showing a wavy line.

Model 3. The upper jaw of a foetus (14 weeks old) 11½ centimetres long. The tooth-band did not pass strictly in a horizontal way, but in a slight curve upwards and downwards. Those irregular growths which commenced in the previous model were here seen in greater number. The pulp cavities of the teeth were deepened, and in those of the temporary molars small subdivisions were indicated. In the whole, the tooth structures showed a tendency to separate from the tooth band, more particularly in the region of the incisors. Behind the temporary second molars on both sides the tooth-band had grown further towards the back, and ended in a thin plate of epithelium. The connection between the tooth-band and the epithelium of the jaw was already partially interrupted by absorption, and the connecting line on the surface of the epithelium of the jaw was marked as a shallow groove. In the present model the greater part of this groove is still running on the outside of the dam or wall of the jaw, and is on the top only in the region of the incisors.

Model 4. The left half of the lower jaw of a foetus (17 weeks old) 18 centimetres long. The shape of the jaw was altered to such an extent by the growing temporary teeth, that the tooth furrow now partly runs on the top and partly on the back of the jaw. The tooth-band showed signs of commencing perforations, and the important point was that it becomes perforated right through after a time. The germs of the temporary teeth are already separated from the tooth-band which behind the teeth had (grown) widened again. The subdivisions in the pulp cavities of the temporary molars were clearly visible. The end of the tooth-band (behind the second molar) has thickened and grown sideways round the pulp of the first permanent molar.

Model 5 represented two temporary incisor teeth right side of under jaw of foetus 24 weeks old, 30 centimetres long. The teeth were already quite advanced in development, and had dentine and enamel formed.

Mr. Storer Bennett said that it was difficult to do more than try to follow, and take in to a limited extent, so very abstruse a communication as that they had just listened to, but one point struck him as extremely interesting in connection with those rare cases of entire absence of temporary teeth. On the orthodox view that the permanent teeth were developed from the temporary ones these cases were incapable of explanation, but on the view just put forward the difficulty vanished.

Mr. F. J. Bennett drew attention to some cases read before the Pathological Society by Mr. Watson Cheyne, on a condition of bone disease called "Quiet Necrosis," in which large portions of the interior of long bones had become necrosed, and subsequently attacked by absorption through the agency of the absorption cells of granulation tissue, and without the formation of pus. He further compared these cases to those of absorption of the interior of the fangs of permanent teeth, where the method also appeared to be similar. A lantern photograph in illustration of this point was shown on a screen.

Mr. DAVID HEPBURN made a casual communication on the subject of Superior Protrusion, and showed models illustrating the various stages of treatment, by means of lantern slides thrown on a screen. He said that when he was asked to give a "casual" on the subject his intention was simply to show the first and last models of a case of protrusion with the plate worn; he had, however, added a few more slides. The first case was that of a young lady of 14 years of age, a very favourable period in Mr. Hepburn's opinion for the treatment of such cases. There were, he said, a certain number of cases of protrusion of the upper teeth which, if left to themselves, would cure themselves, and later on he would show a case in which such a condition existed. In this instance the whole of the jaw had gone forward, carrying the teeth with it. The lower and upper jaw did not accord in any way, and the patient had great power of movement of the lower jaw. The six-year-old molars were carious, and the first bicuspid Mr. Hepburn condemned and removed. On the point of heredity, the mother had a perfect denture, articulation, and arch, and the father also had a peculiarly good set of teeth, none being absent, and the arch perfect. Slide 1 showed the bicuspid extracted and the oblique direction of the canines. When one had obliquity of canine and obliquity of incisors, Mr. Hepburn thought it well to act upon the canine, drawing that back first and then afterwards draw back the incisors. Slide 2 showed an overlapping plate, which did not touch the teeth at the back, and gold wire hooked round the canine. After trying bands, etc., Mr. Hepburn had settled down to use gold springs and gold wire whenever he could, finding them more easy to bend and much stronger than piano wire. Slide 3 showed the case after the plate had been worn about a month, the canine drawn somewhat back, and gradual interference with articulation being exhibited. Slide 4 showed the kind of plate that was worn to act upon the incisor teeth. It was an ordinary overlapping plate, and from the vulcanite wings sort of spring wires were turned up at the end, flattened, and carefully polished, pressing on the teeth. Mr. Hepburn always recommended a double wire carried down through the wing and up into the palate. He did not think it desirable to attempt to act upon all the teeth together. A point to be remembered was, that as soon as any pressure is brought to bear upon the teeth the plate tilts back, a hickory wedge might be inserted to prevent this. Slide 5 showing the case after the plate had been worn about five months, great interference with the bite existed, but marked improvement in the position of the incisors. Slide 6 showed the case after the plate had been worn for six months, rather a long time, but Mr. Hepburn thought a slow movement infinitely preferable to a rapid one, as it gave a more permanent result and one did not get the same amount of elongation of the teeth. Slide 7 showed the alteration of the arch. Slide 8 showed first and last model. With regard to the alteration and interference of the bite, it seemed to Mr. Hepburn inevitable in such cases, but he thought it might be hoped that if one kept the teeth in for a sufficiently long time this state of things would improve. The incisors in these cases of protrusion are abnormally long to start with, but he did not think they rose much after six years of age, while the bicuspids did. The last illustration was that of a case of protrusion in a boy aged twelve. The boy came under his treatment in 1880, and it was a case which he diagonised as one that would cure itself. The father had a fine lot of teeth, but the mother seemed to have those conditions which might have occurred after a certain amount of protrusion in childhood, that is to say there was a certain amount of protrusion but no disfigurement. From the likeness of the boy to the mother he thought the case would be similar, and it turned out to be so, the reason being that the bicuspids and molars were rising gradually. He saw the patient last year, now a man of 24, and there was practically no protrusion at all.

Mr. MUMMERY said that with regard to the last case of spontaneous cure he would like to ask if Mr. Hepburn did not think that if the patient lost any molars the teeth would not come forward again.

Mr. F. H. BENNETT remarked that the reason that one could not hope for a self cure in the first case seemed to him that the bite was a tooth forward, the second bicuspid originally occupied a space between the first and second, He thought that anterior protrusion was due to pressure at the back of the mouth from the region of the forming wisdom teeth or second molars.

Mr. R. H. WOODHOUSE said there was one point which he thought Mr. Hepburn did not mention, viz., whether it was intentional to bring the second molar in contact? He should also like to ask what means he adopted to keep the teeth in position.

Mr. LAWRENCE READ regretted to hear that Mr. Hepburn had fallen out with pianoforte wire; with the steel wire he had been able to move teeth farther than with loose band. He thought that those who fell out with steel springs used them too stout.

Mr. Hepburn in reply said, with regard to the first question, he was not sure that in that particular case the interference of the bite was inevitable; the teeth were certainly capped, but if they had been left to themselves the other brought in by any means he thought there would have been an interference. Mr. Mummery said "if a back tooth were lost would the irregularity re-assert itself?" Most certainly he thought it would. Mr. Read he knew was a great advocate of pianoforte wire, and in the hospital he (Mr. Hepburn) knew that they could not afford to use gold wire, but in his private practice he used it, and found that at a critical point whereas piano wire gave way the gold wire did not.

After the usual votes of thanks the meeting terminated.

DENTAL STUDENTS' SOCIETY, LONDON DENTAL HOSPITAL.

Ordinary General Meeting, held Monday, May 8th, the President, W. H. Woodruff, Esq., in the Chair; the minutes of the previous meeting were read and confirmed.

The following new members were proposed by the Secretary: Messrs. J. Tindall, R. McKay, E. Parrot, E. F. Day, P. F. Swabey, E. P. Smith, E. Joseph, J. B. Bateman, G. Macdonald, W. B. Barnard, S. Bowtell, J. H. Bennett, G. Bates, J. Brown, A. Jefferies, S. Bonnalie, J. Newton, and G. Fisher.

It was announced that Mr. Storer-Bennett had presented the Society with cases for their new microscopes, and boxes for the lenses.

The following resolution, concerning the library was read "That any Member may borrow a book for the period of one week, and in the event of no other application being made, may renew for another week, but on taking the same shall sign the Librarian's book provided for that purpose."

On casual communications being called for, Mr. W. Gabell, on behalf of Mr. Morley, presented two models showing missing incisors, and Mr. Torpey showed some teeth with well marked attrition, from a patient about 50-60 years old.

The President then called on Mr. A. B. Densham for his paper on, "Some Surgical Operations About the Mouth." (See page 241.)

In opening the discussion,

Mr. E. Lloyd-Williams apologised for using the time of a Students' Society; he congratulated Mr. Densham on the practical scope of his paper. He thought that after opening an acute abscess, it was unnecessary to pack it, and regretted that the writer had not referred to the dental after-treatment ; and to avoid the danger of cutting the patient's lip, he advocated a small Paget knife in good condition, and called attention to the necessity for strict aseptic conditions.

In treating dental cysts, always remove the tooth and cut away the walls with the Paget knife, and Mr. Densham was right in advocating a large opening in antrum cases ; it was best to enlarge the socket of the anterior buccal root of the first upper molar.

In removing epulides, he thought that it was unnecessary to cut away the bone at the first operation, and quoted a case of an epulis between the central incisors of a young girl, growing from a limited pedicle, which was cut away, and silver nitrate applied.

Mr. Bennett asked if Mr. Lloyd-Williams advocated scraping the periosteum away.

Mr. Lloyd-Williams said, No, because they were usually thought to grow from the alveolar-dental membrane, which is inaccessible.

Mr. Clarence was sorry to differ from Mr. Lloyd-Williams, but he believed in a thorough treatment, and so cut away the alveolus from which the epulis grew. Why did Mr. Densham not crush in the walls of cysts ? In treating antrum cases a large syringe should be used, sometimes these cases were very obstinate, perhaps owing to necrosis ; he also mentioned a case of necrosis of the lower jaw treated with zinc chloride 8 grs. to the oz., which was cured in three weeks, and he congratulated Mr. Densham on his practical paper.

Mr. Nicol said that having cut sections of epulides removed with the bone, he found that there were two varieties, the encapsuled and the non-encapsuled, the ones with pedicle being the encapsuled, which might therefore be removed with a knife only, whilst the sessile ones had better be removed with a piece of the bone.

Mr. Bennett stated that the antrum might be divided into two by a septum. and empyema only take place in the one cavity.

Mr. May said that he had been taught that an epulis grew from the periosteum, but those he had seen seemed to grow as much from the gum.

Mr. Mosely congratulated Mr. Densham on his paper, and said that he should hesitate to remove teeth on account of an epulis, and in empyema of the antrum it was sometimes advisable to open through the canine fossa.

Mr. HALLIDAY advocated the ligaturing of epulides, and asked if silver nitrate was a good caustic for the wound.

Mr. CLARENCE thought that after ligaturing the silver nitrate would hasten the recurrence.

Mr. GABELL said that when using a knife in the mouth he protected all but the point with cotton wool, he also advocated the liniment of iodine as an injection for cysts, and asked Mr. Densham where he drew the line between hypertrophy of the gum and epulis.

Mr. MELLERSH thought that opening through the canine fossa was the easiest way in antrum cases.

Mr. HOLFORD said that the reader of the paper spoke very cheerfully about antrum cases, he had found them very long and troublesome, and he advocated an occasional change of the wash used.

Mr. CLARENCE said chromic acid was a very good wash.

Mr. W. GABELL said that in reading up the subject of epulis he became confused by the number of different varieties spoken of, and asked Mr. Densham how to distinguish between them ; he also wished to know if anything had been done recently in diagnosing antrum mischief by means of the electric light.

Mr. WOODRUFF said that empyema was very troublesome, and that much mischief was done by active treatment, the opening was usually indicated to us, and we should use very mild treatment, washing with warm water only was a very good way. As regards cysts, when you can cut down on them, do so, but to effect a cure it is necessary to remove the tooth. He then called upon Mr. Densham for his reply.

In his reply Mr. Densham said he would endeavour to make clear some of his remarks which had been misunderstood, and would to the best of his power, explain some of the points not already answered by other gentlemen. Thanking Mr. Lloyd-Williams for his remarks ; he explained that in advocating the treatment of plugging the cavity of an alveolar abscess, he followed the teaching of two eminent authorities at his hospital who maintain that when a large cavity is to heal by granulation it is necessary to plug the cavity, or to keep the walls of the cavity in close approximation, by properly applied supports ; in the case of mammary abscesses, the walls can be kept in contact by means of elastic dressing supported by bandages ; in other cases where this treatment is impossible, in alveolar abscesses for instance, it is necessary for granulation of the whole of the cavity to keep the opening patent to the very end. He considered the Paget knife a very useful instrument in the mouth, but as the blade of this knife is quite as long as that of an ordinary scalpel he thought the same precautions should be taken with this as other knives ; he did not think they were quite so applicable where bone had to be perforated, as he had seen two blades broken under such circumstances. In excuse for having omitted to mention the use of antiseptics, he said that having been brought up in an atmosphere of antiseptics he had forgotten that other people were not also imbued with antiseptic ideas ; in operations about the mouth of course it is impossible to carry out the minor details of antiseptic surgery, but the utmost should be done by means of frequent use of mouth washes to keep the oral cavity as healthy as possible. He regretted that his remarks on epulis had been misunderstood, as he was strongly of opinion that in all cases where possible, the effect of removal of the growth and adjacent alveolus with the knife should be tried. The object of the treatment of scraping the periosteum, advocated by Mr. Clarence, was he thought effected equally well by the method of removing all soft alveolus by the knife as described in the operation. He had mentioned that in the treatment of cysts, the removal of the whole of the bony wall was not necessary for effectual treatment. Mr. Nicol's description of the epulis he examined was, he thought, very interesting and threw considerable light upon the subject of recurrence of these tumours after removal. With regard to bony septa dividing the cavity of the antrum, as mentioned by Mr. Bennett, he had drawn attention to the presence of loculi in the floor of the antrum described by Giraldes but did not recollect having read that these septa ever extended through the cavity so as to form several distinct cavities, he did not think such a condition was ever present. He did not consider that it was necessary to flush out the cavity until the fluid escaped through the opening into the middle meatus, as in the majority of cases of empyema of the antrum, the accompanying turgidity of the mucous membrane lining that cavity was quite sufficient to block that opening, and so effectually prevent the passage of any fluid into the nasal cavity. He said that he knew of the method of opening the antrum through the canine fossa as mentioned by Mr. Moseley; he had not mentioned it as he had never seen a case treated in this way, and had seen very good results in cases treated by opening above the position of the second molar tooth. In answer to Mr. Halliday, he considered that the application of nitrate of silver, or any other caustic to the stump left by incomplete removal of an epulis, would certainly tend to favour its recurrence, as the impaired vitality of the tissues under such conditions would readily lend itself to morbid growth. He agreed with Mr. D. P. Gabell that it was difficult in many cases to say what was an epulis, and what hypertrophied gum, but he thought that Mr. Gabell would be quite safe in considering a growth contiguous to a carious tooth was hypertrophied gum, as one of the characteristic features of epulis was the association with perfectly sound teeth. With regard to the use of iodine in preference to scraping for the treatment of the lining membrane of cysts, the object was so easily and thoroughly effected with the sharp spoon that he considered an unpleasant substance like iodine of inferior value. Mr. Holford had thought his view of the result of treatment in cases of empyema of the antrum was too happy, and he would like first to point out that his knowledge of the subject was entirely theoretical, as all the gentlemen present must know that his practical opportunities were necessarily limited. He considered however, that the majority of practitioners erred in not recognising that such cases were merely abscesses, and that although hidden from sight the practitioner might be sure that the same conditions were present as in abscesses elsewhere. The reason why these cases ran such a very chronic course was, he thought, that the treatment adopted was too vigorous. The frequent use of forcible streams of antiseptic fluids was only productive of irritation and destruction of granulations in abscesses, this was the teaching of Mr. Watson Cheyne, whom all consider a good authority. If practitioners would content themselves with less energetic and continuous syringing he thought that perhaps the result of these cases would be more satisfactory. He then concluded by thanking all the gentlemen present for the very kind way in which they had received and commented upon his paper.

A vote of thanks having been accorded to Mr. Densham for his paper, and to the gentlemen who brought forward casual communications, the President announced that the next meeting of the Society would be a clinical evening in June.

The proceedings then terminated.

THE DENTAL RECORD, LONDON: JUNE 1, 1893.

PALMAM QUI MERUIT FERAT.

We are frequently having paragraphs sent us, clipped from small local papers, with some such legend as the following: "Mr. So-and-so has just returned from a visit to the United States of America where he has received an honorary degree of D.D.S., conferred upon him in recognition of his labours in the dental profession for fifteen or twenty years', (as the case may be.) It is indeed pitiable if the recipient of such honours (?) are honest in their acceptance of these degrees, and it also shows a most lamentable ignorance of the meaning of degrees in general, and American degrees in particular. When a degree is obtained after a satisfactory test examination following a sufficiently extended curriculum—in the present state of knowledge four or five years is certainly the minimum—it is a glory and an honour to the student who obtains it, the more so when he is examined by strangers, and not by his own teachers. Under such circumstances there is a rational cause both for the conferance and the acceptance and use of the letters, marking such academic distinction, but when Mr. Dick, Tom, or Harry of whom no one has ever heard outside of his native town or village, becomes the proud possessor of a dental degree *honoris causâ* (for sooth!) something seems rotten in the "State of Denmark." A man who patiently labours at an honourable calling for half a century, and who does his duty in the state to which he is called does not receive the decoration of an honorary degree why should he? he has only done what some nine-tenths of his fellow men have done, and if we were all honorary D.D.S.'s, or L.D.S.'s, or F.R.S.'s it would become quite a distinction to be plain Mr. Nobody. Besides in an unregenerate age like the present, when the air is thick with bogus degrees, or degrees granted after inadequate examination and next to no compulsory curriculum, it becomes a doubtful compliment to have an alien degree conferred upon one, especially if one's Alma Mater has for some unaccountable reason been so blind to one's merits as to withhold the home-made article! Of course there are honorary degrees granted to men in England, but these complimentary academic honours are bestowed in the sight of all men, and certainly only to such persons as are either graduates of other universities or to those whose names are already engraved on the "sands of time" as of men who are a head and shoulders above their peers. There is certainly no reason why the hard toiling coster of whom Mr. Chevalier sings, should not become be-doctored if all those whose career has been carried out "according to their lights" are to be decorated for their tenacity of purpose and unweariness in well doing, but the thing would be regarded as a *reductio ad absurdum,* and justly. We cannot hope for meretricious honours if we have any proper self respect, and further we cannot expect to receive from a foreign university or college granting degrees any dental degree that is worth the paper upon which it is engrossed unless we have done some work above that achieved by our fellows, and which has obtained recognition by the profession in England. To accept mere Brummagem degrees is to lower ourselves and to bring the profession to which we belong to a level a good deal lower than the angels. *Palmam qui meruit ferat!*

APPOINTMENTS.

A. Alford Sarson, L.D.S. has been appointed Honorary Consulting Dental Surgeon to the Llandudno Cottage Hospital, and F. Vincent Walker, L.D.S.Eng., and F.P.S.G., Dental Surgeon to the same institution.

Selections.

THE QUESTION OF LOCAL ANÆSTHETIC NOSTRUMS.

By Edward C. Kirk, D.D.S., Philadelphia, Pa.

The discovery of the local anæsthetic properties of cocaine, the active principle of the Erythroxylon coca, has among other things resulted in the production of a crop of nostrums, which are advertised and put upon the market for specific use by injection into the gum-tissue to render the operation of tooth extraction painless.

It is noteworthy that this method of producing local anæsthesia was not practised— in fact, was unknown—until after the discovery of the anæsthetic properties of cocaine and its salts. Since then, however, the number of nostrums offered to the dental profession for this purpose has rapidly increased, until at present their name is legion, and they continue to multiply, seemingly in a geometrical ratio, each and all claiming to be the "best," "safest," and altogether "most satisfactory,"—and apparently the end is not yet. Such a multiplicity of preparations, each recommended as efficient and reliable, none lacking in numbers of enthusiastic advocates, whose laudatory testimonials are appended to the advertising circulars accompanying the preparations, would appear to indicate a widespread use of these nostrums by dental practitioners. Private letters of enquiry, constantly received by your essayist also tend to confirm this view, so that the question of the status of this class of preparations and the attitude of the dental profession towards their use is one that seems to need definition,—to which end I shall ask your consideration of the results of an investigation which I have undertaken with regard to this question, in the hope that it may lead to some well-defined action on the part of the profession, respecting these preparations.

For the sake of clearness, let us discuss the question under two divisions : First, that of nostrums in general ; and second, this class of nostrums in particular. It is well to distinguish at the outset the difference between a patented medicine formula and one the composition and ingredients of which are kept secret. The term nostrum has been used to designate both, but Webster restricts it to secret formulæ. The term *arcanum* is used by Dunglison to describe secret formulæ especially, and this word is defined as "any recipe or preparation reputed to possess great efficacy, whose composition is kept secret."

The distinction between patented formulæ and those which are kept secret is of importance, inasmuch as the patenting of a formula is in some degree equivalent to making its composition public, as the records of these patented formulæ are accessible to all who care to investigate them. The formulæ of secret preparations, on the contrary, are the sole property of the proprietors or their agents.

A certain number of dental practitioners, forming an organized body and having in mind the conservation of the best interests of the profession, have formulated certain rules for their guidance, which rules are known as the Code of Ethics, and adherence to these is made the measure of reputability which in their view distinguishes those practitioners who are animated by right motives towards their professional brethren from those who are not so animated. The ethical principle upon which the code rests is that which animates all communities whose moral growth has progressed to a point when it is possible for their members to conceive the maxim, "Do unto others as ye would that they should do unto you," and live up to it, that the evolution of this maxim in a community does actually represent a higher and better status of society is perfectly demonstrable objectively; therefore we are warranted in asserting that those who are animated by this principle represent the better element in any society, the dental profession included.

With respect to the use of nostrums, the Code of Ethics of the American Dental Association, in Article II, section 3, under head of "Maintaining Professional Character," says, "It is unprofessional to circulate or recommend nostrums, or to perform any other similar acts," which means that the moral sense of the better element in dentistry is against the use of these preparations. In his annual address in 1892, the president of the Pennsylvania State Dental Society, at its Cresson meeting, expressed his views upon the subject as follows: "If we are professional at all, it is entirely inconsistent with the pretension that anyone should secure control of the procedures or the use of appliances for his own exclusive benefit, and unworthy those who are under the moral obligation to fulfil the maxim, 'Freely as ye have received, freely give.' The endeavour to impose upon the profession, by dispensing, for gain, secret formulæ of any of the preparations or materials we use is a still more reprehensible practice, and the use of such should be excluded from any and every society. To effectually stamp out this evil there appears only one means of action, which is for each practitioner to refuse to use any preparation the ingrediency and the proportions of which are unknown to him."

During the ensuing discussion of the address, Dr. J. Allen Osmun said, "There is no discovery or improvement in the practice of dentistry that would benefit the profession or their patients that the dentist who possesses it is not under bounden obligations to give to the profession. He owes it to them."

Under the title, "The Right and the Wrong of It," the Philadelphia *Medical News*, December 24th, 1892, quotes the following from the *American Lancet*: "The *Practitioners' Monthly* says, 'It is not wrong to use a proprietary medicine because the code says so or because some men think so. It is wrong because it damages both medicine and pharmacy. It is wrong because it retards progress, sacrifices the good of the mass for the profit of the individual. The code or men's thoughts are of value only as they represent facts." And again, the *Journal of the American Medical Association*, October 8th, 1892, prints the following under the title, "The Falsity of Nostrum Dealing": "*The Positive Medicator* of June has formulated the following conclusions as the result of a very full knowledge of the ways and means of the patent-medicine vendors:

"1. They claim to be specifics, which they are not.

"2. The consumer pays an excessive price for a secret preparation when, were its formula known, the same preparation could be prepared and sold by his druggist at a reasonable figure.

"3. Simple remedies are clouded in secrecy, and sold as valuable new discoveries, which they are not.

"4. Nostrums interfere with legitimate pharmacy, and being sold by dry-goods bazaars, rob the pharmacist of his right alone to compound simple remedies for simple ailments.

"5. Their selling value depends not upon their merit, but entirely upon their being pushed by advertising, which advertising in the end the consumer has to pay for.

"6. There is no question but that the manner of advertising many nostrums is injurious to the public good. Ignorant people with slight illnesses are made to believe that they are in dangerous conditions, and frightened into buying and consuming stuff which may not at all be suited to their cases, and which they use at an excessive cost to their pocket-books and general health," and then adds "From the above statement it will be seen that it is practically impossible for the nostrum-maker to say a true word in any of his published statements. One ingenious calculator has figured out the cost of production of a dollar bottle of advertised medicine, and he has found that the utmost of drug-value that the manufacturer can afford to deliver to the sick person is ten cents. In other words, ninety cents out of the dollar paid by the consumer are necessarily absorbed by the proprietor, the wholesale druggist, the local dealer, and the newspapers and other channels of spreading the lying claims of the nostrum, before the deluded patient receives his dime's worth of noxious liquid. And doubtless it is better for the patient that he gets that small return for his dollar ; the less he gets for his money the better off he will be."

Sufficient has perhaps been said to place before you a reasonably clear presentations of the reasons why the ethical sense of both medical and dental practitioners of the better class is antagonistic to the use of nostrums in general.

Let us now examine the question with respect to the special class of nostrums advertised for the painless extraction of teeth, whose proprietors are flooding the country with laudatory circulars, each one claiming to be the best ; new ones appearing in such rapid succession that they seem to "breed like wolves in a famine-stricken land."

The fact that this class of preparations has made its appearance *since* the discovery of the local anesthetic properties of cocain and its salts, and the close resemblance to cocain anæsthesia of the anesthetic action of all these nostrums which I have examined, led me to suspect that they depended on cocain in each instance for their activity, if they really had any,—especially as until quite recently no other drug was known to possess the obtunding property in anything like the kind or degree belonging to cocain. I therefore obtained samples of ten of the various preparations most extensively known and advertised as local anesthetics for painless extraction of teeth, taking special care in each instance to secure original unbroken packages from the manufacturer or his agent. These I had analyzed by the professor of chemistry at the Philadelphia College of Pharmacy, Professor Samuel P. Sadtler, Ph.D., a chemist of large reputation and experience, and of unquestioned ability, especially in this field of work. His communications of results is as follows :

PHILADELPHIA, *February* 2, 1893.

DR. E. C. KIRK :

Dear Sir,—In December last, I received a package containing samples of so-called "local anesthetics," with a request that I give them a careful chemical analysis, particularly noting the percentage of cocain salt which might be present.

The list of designations of these ten samples, with a description of their appearance, is as follows :

1. *Improved Anesthetic.* For painless extraction of teeth. Colorless liquid, with odor of carbolic acid.

2. *Arophene.* A local anesthetic for the painless extraction of teeth. Colorless liquid, with odor of rose and also of carbolic acid.

3. *Jessop's Local Anesthetic.* Colorless liquid, with slight odor of carbolic acid.

4. *Dorsenia, the Brazilian Local Anesthetic.* Colorless liquid, with distinct odor of camphor.

5. *Local Anesthetic.* Brownish-yellow liquid, with odor of creasote or carbolic acid.

6. *Odontunder.* Local anesthetic for the painless extraction of teeth. Colorless liquid, with odor of rose.

7. *Dental Surprise.* Colorless liquid, with carbolic-acid odor.

8. *Local Anesthetic.* For the painless extraction of teeth. Nearly colorless liquid, with odor of peppermint and cloves.

9. *Eureka Anesthetic.* Colorless liquid, with slight carbolic odor.

10. *Anæstheto-Obtundent No. 2.* Slightly yellowish liquid ; odor of camphor and mixture of essential oils.

All of these were given a careful qualitative examination, and then the total non-volatile matter was determined. Chlorin determinations were next made from which the anhydrous cocain hydrochlorate could be calculated. The pure alkaloid cocain was then extracted with chloroform, the difference between this figure and that obtained from the chlorine determination indicating decomposition products due to the use of commercial cocain salts. The results are summarized in tabular form.

I remain, yours very truly, SAMUEL P. SADTLER.

These on analysis were found to contain respectively of non-volatile matter, 4·06 ; 12·92 (liquid) ; 3·82 ; 0·30 ; 5·46 ; 10·14 (liquid.) ; 1·37 ; 0·06 ; 3·36 (liquid.)

Of anhydrous cocain hydrochlorate from chlorin determinations, respectively 3·90; 1·46; 2·63; 0·20; 5·68; 1·35; 1·46; none. 3·26; 3·39.

Of alkaloid extracted by chloroform, respectively 3·27; 1·05; 1·22; 0·145; 3·72; 1·10; 1·16; none. 1·37; 2·61.

And of other constituents respectively carbolic acid, chloral hydrate; carbolic acid, chloral, glycerine, oil of rose, and probably alcohol; carbolic acid, oil of rose; carbolic acid, camphor, and probably alcohol; alcohol, oil of peppermint, brown color, and iodine (indicating aristol possibly); carbolic acid, glycerine, oil of rose, and probably alcohol; carbolic acid; alcohol solution of oils of peppermint and cloves; carbolic acid and oil of rose; carbolic acid, camphor, glycerin, oils of cinnamon and citronella, and probably alcohol.

It will be seen from this report that all of the preparations examined, with one exception, were found to contain cocain. This exhibit becomes interesting from the fact that in some cases the proprietors either explicitly deny that their preparation contains cocain, or so word their statements as to warrant that inference. In support of this, I quote as follows from a pamphlet entitled "Dorsenia."

"To those who are unfamiliar with this remarkable drug we would say that while it is a most reliable local anesthetic, acting immediately with lasting anesthetic properties, its composition is *absolutely void* of cocaine, chloral, arsenic, opium, or any poisonous drugs. Thus it may be used on all classes of patients with entire safety.

"The use of Dorsenia in dental surgery has met with such universal successs that the medical profession, one by one, are adopting its use in minor surgery as a substitute for cocaine and freezing. Dorsenia has so many advantages over cocaine that it at once commends itself to the surgeon."

In the same pamphlet, under the heading, "The Disadvantages of cocaine, gas, and other vapors, ether and chloroform," it says:—

"Cocaine—Action uncertain; must wait ten to fifteen minutes for desired effect; anesthesia rarely complete. In the majority of cases, after-effects, serious toxic symptoms. Many deaths have been reported."

In the same pamphlet, under the title, "The advantages of Dorsenia," it states that

"It may be used on all classes of patients, the young, the old, the sick, and the healthy, and for the extraction of every tooth in the jaw at one sitting, without danger. No after-effects."

And further :

"The value of Dorsenia has been demonstrated before such societies as the First District Dental Society of New York, the Union Convention of Dentists in Boston, Mass, the Dominion Dental Society, Montreal, Canada, etc."

The analysis shows this preparation to contain at least 0·20 per cent. of cocain hydrochlorate.

In a circular issued by the Arophene Manufacturing Company, Kingsville, Ohio, occur the following statements :

"Dentists who value their practice and reputation should beware of the many cocaine preparations now being put upon the market. If you use them, trouble may come when you least think, and ruin your business. Use Arophene and be on the safe side.

"The dental *profession* has already learned much of the new remedy aristol, which is being so thoroughly discussed in all leading dental and medical journals of the day. This remedy enters largely into the composition of Arophene, which alone should be a guarantee that it is the latest as well as the safest and best local anesthetic on the market."

The analysis shows entire absence of aristol.

"Arophene will positively destroy all sense of pain, and cause no after-trouble. It is applied to the gums, so that there is no more need of inhaling poisonous drugs, such as chloroform, ether, gas, etc., thereby risking one's life, or at best impairing their health. It can be used on any one even those suffering with heart-disease, lung-trouble, or nervous debility, whether young or old.

"You are aware that the market is flooded with so-called local anesthetics. Many of these are only imitations of Arophene, trying to follow in our footsteps only to fall far short of their desires. Do not be deceived, do not trifle with those cheap cocaine preparations, for when you least expect it, you may ruin your practice and your professional standing.

"No antidote is necessary when using Arophene, more than a swallow of cold water, or dilute alcohol or other stimulants, and fresh air. Be pleasing, and make your patient feel cordial and pleasant as possible. Apply Arophene to the gums by means of cotton, then insert the point of a fine hypodermic needle in the tissue surrounding the teeth to be extracted, at an angle, going deeper as the gums turn white, using alike on each side of teeth. Wait about two miuutes and extract, going down low enough to assure the teeth not to break. Have no fear in using Arophene. It is the safest anesthetic ever used."

The foregoing suggestions for the relief of unpleasant symptoms are those which, as you are aware, are used in cocain-poisoning, and the analysis shows the presence of 1·46 per cent. of cocain.

In the circular of Directions for the Use of the Anæstheto-Obtundent" occurs the following statement :

"The proprietor wishes it distinctly understood that his Anæstheto-Obtundents are not death-producing compounds, hence the benumbing qualities are recommended for *five minutes* only. They will act sharply for that time ; the anesthesia commences in ten seconds on soft tissues, and increases, which is not the case with cocaine."

The analysis of this preparation shows 3·39 per cent. cocain hydrochlorate.

In the circular entitled "Special Directions for the Improved Anesthetic," No. 1 it states,—

"Occasionally a patient may complain of faint feeling or slight sickness at stomach ; to releive this, give twenty drops of aromatic spirits of ammonia in a little water."

A very good antidote to poisoning by cocain, of which there is 3.90 per dent. in the preparation.

Viewed from the standpoint of a knowledge of their composition, the claims of the proprietors of these nostrums, as set forth in their respective circulars, make interesting reading, with which you are all no doubt quite familiar, but enough has been here quoted to show at least one phase of its character.

The question then arises, is the use of cocain or its salts in the manner and for the purposes set forth a legitimate procedure under conditions where the operater is not aware of the fact that he is using cocain ? Let us see what the status of the admitted and recognised action of cocain is at present, and whether it is regarded as a uniformly safe drug to use, even with a full knowledge of the rationale of its physiological action and the consequent command of the situation which such a knowledge entails, whereby any untoward action of the drug which threatens life may be promptly and intelligently combated.

The deaths which have occurred from cocain administration are quite numerous; current medical and dental literature for the past few years has contained frequent reports of such fatalities. Moreover the dosage under which fatal casualities have occurred has varied to such an extent that no fixed limit can be positively placed for a maximum safe dose of this drug. It has been shown conclusively that one is quite likely to frequently meet temperamental diosyncrasies in individual cases, where even minute doses of cocain may produce the most alarming symptoms. In support of this I quote the following communication from Dr. Mattison, medical director of the Brooklyn Home for Habitués, published in the Philadelphia *Times and Register*, October 15, 1892. The article is in reply to a statement in a previous issue by the editor of that journal, Dr. W. F. Waugh, respecting syncope following the local use of cocain in two patients, of whom he says, "They were persons who could be expected to faint on any suitable occasion, and my impression is that this is true in all, or nearly all, reported cases."

Dr. Mattison, however, thinks differently; he says,—

"In three papers by myself,—'Cocain Dosage and Cocain Addiction,' *London Lancet*, May 23, 1887; 'Cocaine Toxæmia,' *La Tribune Medical*, Paris, January 1, 1888; and 'Cocain Poisoning,' *Medical and Surgical Reporter*, October 24, 1891,—more than two hundred cases of poisoning by cocain, including thirteen deaths, are reported. In a fourth paper—soon to appear—more deaths and other toxic cases are cited, making a record that medical men should ever have in mind when using this valued but dangerous—sometimes—drug.

"I think your 'impression' that 'all, or nearly all, the reported cases were persons who could be expected to faint on any suitable occasion, a mistaken one. It will never do to presume that a patient who, by virtue of robust build, is not likely to faint, will be proof against the untoward effect of cocain, for he who puts such an opinion in practice will run large risk of 'coming to grief.'

"Many of the patients noted in my papers were not subject to syncope, and in the latest reported fatal case in this country,—a recent occurrence in Bellevue Hospital,—a strong, healthy man, who was given a four per cent. solution by urethral injection, died in less than four minutes!

"It may not be amiss to repeat the conclusions of my studies in cocain-toxæmia :

"1. Cocain may be toxic.

"2. This effect is not rare.

"3. There is a lethal dose of cocain.

"4. This dose is uncertain.

"5. Dangerous or deadly results may follow doses usually deemed safe.

"6. Toxic effects may be the sequence of doses large or small, in patients young or old, the feeble or the strong.

"7. The danger, near and remote, is greatest when given under the skin.

"8. Cardiac or renal weakness increases the risk.

"9. Purity of drug will not exempt from ill result.

"10. Caution is needful under all conditions.

"11. Reclus's method, Corning's device, or Esmarch's bandage should be used when injecting.

"12. Nitrite of amyl, hypodermic morphin, hypodermic ether, alcohol, ammonia, and caffein should be at command."

In a paper read at the tenth annual meeting of the American Rhinological Association, at Indianapolis, September 22, 1892, on "The Uses and Abuses of Cocain," Dr. Arthur G. Hobbs, of Atalanta, Ga., says :—

"Since I received my first twenty grains of the hydrochlorate of cocain (a part of the first two-drachm package that arrived in New York), I have used many ounces ; perhaps, altogether, by myself and assistants, almost as many pounds as my original package contained grains.

"It will not be amiss for me to say, in the beginning, that I now have very different opinions of its uses from those I entertained during the first years of its advent.

"The general symptoms are, everything else being equal, much oftener present in proportion to the area of membrane surface involved than in proportion to the strength of the solution applied. Hence, sprays of a week solution are liable to produce toxic symptoms, when much stronger solutions can be applied with a saturated cotton probe or wad, to a limited area, almost with impunity.

"The constitutional effects of cocain are manifested by a feeling of faintness,—it may be even to the loss of consciousness,—a trembling of the limbs, a pallor of the face, any or all of which may appear in one minute, or in fifteen minutes after the application to a large surface. Again, these symptoms may be produced by a small quantity of a one per cent. solution in one individual and not in another ; even if in the latter both the strength and quantity be ten times multiplied. I have never reached a conclusion as to the average amount of cocain that is necessary to produce the constitutional symptoms ; neither do I ever know, the first time I use it, how to estimate the individual's susceptibilities.

"Every individual seems to be a law unto himself as to the quantity necessary in his own case to accomplish complete local anæsthesia ; and even in the same person the amount will vary at different times, with no apparent cause. Under similar circumstances I find it impossible to reach a complete local anæsthesia in some, short of the toxic symptoms; when in others one-tenth of the amount and one-tenth of the time will render the application of a galvano-cautery absolutely painless."

We have now shown by the record of analysis that the nostrums so far examined, with a single exception depend for their action upon the cocain they contain, and we have adduced expert medical testimony to show that the introduction of cocain into the circulation is under certain circumstances attended with grave danger to life; furthermore, that the conditions under which cocain may be safely introduced into the circulation are not well known, or only incompletely made out. It requires no further argument to support the assertion that the use of a drug which is known to be possessed of dangerous activities becomes culpable when its identity is disguised in the form of a nostrum, leaving the administrator absolutely handicapped by reason of his ignorance of the nature of the preparation and of the rational restorative treatment which should be applied in case of threatened danger to the life of his patient. His only resource in such event would be to treat the case on general principles, or rely on the meagre directions furnished by those who compounded the nostrum.

The treatment of cocain syncope is a sufficiently grave and difficult matter when its causation is perfectly known, but when it occurs from cocain *incognito* it is a combat in the dark, with the chances mostly in favour of the enemy.

From the ethical standpoint, the use of this class of preparations appears to be wrong, not only for the general reason that the use of all nostrums is wrong, but in addition because they may become a menace to life. From a purely commercial standpoint the traffic in these preparations is, to put it mildly, unjust,

The present market price of cocain hydrochlorate is about five dollars per ounce, wholesale. A four per cent. solution is therefore worth twenty cents per ounce. The record of analyses of the nine preparations which I have presented to you this evening show amounts of cocain varying from ·20 to 5·68 per cent., which makes an average of 2·59 per cent., representing an actual average value of (in round numbers) thirteen cents for each ounce of the nostrum, and this is sold to the dental practitioner at an average price of one dollar and fifty cents per ounce.

I have left out of the computation the other ingredients, at they are of such slight value as to have no material effect upon the cost.

My object in bringing these data before you has been to call your attention not only to what I regard as a breach of the spirit of our Code of Ethics, but a condition of affairs which seems to me to constitute a real danger to the dental profession and the community at large, and it is in the spirit of this belief that I commend these statements to your consideration.—*Dental Cosmos.*

ROYAL COLLEGE OF SURGEONS IN IRELAND.

Dental Examination.

The following gentlemen having passed the necessary examinations have been admitted Licentiates in Dental Surgery of the College; Mr. S. H. P. Hordern (Leamington) and Mr. J. T. Pycroft (Rochdale).

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

At the May sittings of the Examiners the following candidates passed the first examination for the Diploma in Dental Surgery:—Charles John Luya, Liverpool; John Kyle Mackintosh, Inverness; Alexander Shennan, Houghton-le-Spring; John Douglas Logan, Dublin; James Ogilvie Stewart, Stirling; Joseph Morton, Carlisle; George Paterson, Belfast; Henry Theodore Dreschfeld, Manchester; Walter Ralph le Verrier, Bridport; Alexander Cromar, Aberdeen; Joseph Vincent Coogan, Seville; and the following candidates passed the final examination and were admitted L.D.S. Edinburgh:—Andrew Thom, Edinburgh; John Edward Edwards, Flintshire; and John Charles Holland, Huddersfield.

OBITUARY.

Mr. WILLIAM WILLIAMSON, L.D.S.Eng., (Aberdeen).

It is with much regret that we have to record the death of Mr. William Williamson, which took place on the 10th of last month under somewhat peculiar circumstances. Mr. Williamson was pruning a tree in his garden, when in a downward stroke, the knife suddenly slipped and inflicted a wound in his thigh, piercing a large artery. At the moment he did not appear to realize his danger, but was assisted into the house and medical aid at once sent for. The wound, however, proved to be a most serious one, and before surgical help, could be obtained, or his son Dr. Williamson had arrived, the hæmorrhage proved fatal.

Mr. Williamson was born in Edinburgh in 1817. He commenced his dental career as a pupil under the care of the late Mr. Orrock of that city, and gained distinction while attending his medical classes. He subsequently went to London for a few years in the capacity of an assistant, and in 1841 bought a practice in Leicester. He carried this on successfully for eighteen years, when he was compelled to retire from practice for a time, as his knee, which when he was a boy, had been injured by an accident became actively troublesome, and rest was imperatively demanded. He returned to Scotland, and after a year's interval found himself sufficiently recovered to recommence work—in Elgin—but shortly removing to Aberdeen, he bought the practice of the late Mr. Dewar, which he carried on until 1880, when he retired in favour of his son, Dr. W. Herbert Williamson.

In his public capacity, dentistry in Scotland owes much to Mr. Williamson. At his suggestion a dental department in connection with the Aberdeen Infirmary was initiated in 1862, he acting as dental surgeon to the institution till on his withdrawal from practice the appointment passed into the hands of his son. He was one of the founders of the Odonto-Chirurgical Society of Scotland, and read the first paper before that body on "Some of the Causes of Failure in Stoppings." In 1872 he was elected as its President, and shortly after retiring from practice, an honorary member.

Mr. Williamson was endowed with considerable manipulative ability, developed under the somewhat arduous discipline of carving the bone and ivory dentures so commonly used in his earlier years, and many will remember a group exemplative of his skill exhibited in London some few years back at one of the meetings of the British Dental Association which included some beautifully carved objects in ivory inlaid with gold. The dexterity he manifested in gold stoppings before the more modern aids of rubber dam and complicated mallets were introduced, would win the admiration of many of us now more fortunately circumstanced.

He was a great lover of field and river, more especially of the latter, and if the subject of angling were introduced to him, his anecdotes and experience seemed almost endless.

Mr. Williamson was a true Scotchman in the best sense of the term, a man of high religious principle, with a strong sense of duty, and an unyielding determination. He possessed in a high degree those qualities which have made that nation famous, and which he concentrated to the best of his powers upon the work that lay to his hand, and won for himself the respect and esteem of his fellows, and the love of all those bound to him by family and domestic ties.

W. W. ALLPORT, M.D., D.D.S.

Dr. Walter Webb Allport, a distinguished member of the Dental profession in America, died March 21st, after an illness of five weeks. His death was due to meningitis, preceded by erysipelas.

Dr. Walter Webb Allport was born at Lorain, Jefferson Co., N. Y., June 10, 1824. He was of English descent. In 1844 he entered to study medicine. In 1846 he determined to devote his attention to dentistry, and in 1853 entered the New York Dental College in the capacity of student and demonstrator. He graduated from that institution in 1853, removed to Chicago in 1854, and has practiced his profession there ever since.

In 1858 Dr. Allport was elected President of the Western Dental Society; in 1860 he was elected chairman of the American Dental Association at its organization; in 1865 he was elected President of the American Dental Convention, and in 1886 he was elected President of the American Dental Association. In 1881 Rush Medical College conferred on him the honorary degree of M.D., and for many years he was Emeritus Professor of Dental Surgery in that institution, and in the Chicago College of Dental Surgery. He was a member of the dental section in the Ninth International Medical Congress, which met in Washington in 1887, and was made Vice-President of the section. He was one of the organizers of the Chicago Microscopical Society, and for a long while its President. He was largely instrumental in the organization of the American Dental Association.

REVIEW.

NOTES ON ANÆSTHETICS IN DENTAL SURGERY. By A. S. UNDERWOOD, M.R.C.S., L.D.S., and C. C. BRAINE, F.R.C.S. Second edition Claudius Ash and Sons, 155 pp. illustrated.

In the preface to the first edition the author tells us that Mr. Woodhouse Braine read and amended his proof sheets while Mr. Bailey and Mr. Bird gave their advice and experience; in the preface to the present edition the names of Mr. Carter Braine, Dr. Hewitt, and Mr. Rowell, are added to this list of contributing anæsthetic collaborators, the first as joint author and the latter as specialists specialising a specialty. It is not to be wondered at then, with such a goodly show of experts as helpers, that Mr. Underwood has been able to bring his valuable little manual to its present standard of excellence. His knowledge of the wants of students gleaned through many years of patient and successful work as a teacher, and his literary skill have enabled Mr. Underwood to present to dental students at once a practical and a readable book. The manual is, we are told by the title page, intended for dental students, but it contains much that is outside their daily work, and perhaps it would have been well to caution readers, that careful as are the chapters dealing with chloroform and ether, yet they do not pretend to give the tyro more than that "little knowledge which is a dangerous thing" in dealing with these more dangerous anæsthetics. Chapter 1 deals with the history of anæsthetics, chapter 3 with nitrous oxide, and the method of mixing nitrous oxide with air or with oxygen are fully described in succeeding chapters. Ether and chloroform are also dealt with, and a chapter added on the physiology of anæsthesia. Evident pains have been taken to render this little manual as useful and practical as its small size renders possible. The general get up of the book is excellent, and the use of several new woodcuts certainly adds to its value.

Journalistic Memorabilia.

REFERRING to Mr. Quinby's strictures on "American Dentists" in his address at Manchester, Dr. Lord says: It is not to be presumed that America wishes to be, or should be, held responsible for all dentists who call themselves "American" dentists. Some of our schools have no doubt graduated men who know next to nothing about dentistry, practically; and if they have thus disgraced themselves and the profession, the responsibility and the odium should be placed where they belong. After discussing and denouncing the practice of securing patents for various kinds of implements, methods, and appliances, he says: "These are, I believe, some of the reasons why the word 'American,' used as a prefix to dentistry, constitutes almost a term of reproach, for on this side of the Atlantic it has become, I am sorry to say, synonymous with the veriest chicanery and humbug; but America has not ceased, and I hope will never cease to produce dentists who are honorable men, and who will cordially agree with the sentiments of a late letter in the *Times* by a distinguished member of this Association, who says: 'Dentistry, like medicine and surgery, is catholic, and is practised by honest men for the public good, and therefore all its methods are made public to all members of the profession.'" Mr. Quinby's address contains almost a complete record of the many objectionable features connected with the practice of dentistry all over the world by the "camp-followers" and imitators of American dentists. Bogus diplomas, patented instruments and methods, the sale of State and county patent-rights, advertisements of peculiar treatment and claims of special skill in the public press, all received merited and scathing denunciation at Mr. Quinby's hand. Remembering the official action of the New York Odontological Society against the patenting of instruments or methods, and because of the exclusion of all reference to the same from our published proceedings, I feel that I but express the sentiments of at least a large majority when I commend Mr. Quinby for all that he has said against such unprofessional conduct. I also take pleasure in assuring him that the true American dentist,—by which I mean the skilful, conscientious, tooth-saving practitioner,—joins him in condemning all such practices, and would inform him that by both example and precept, and by stringent dental law, the effort is being made, and with fairly satisfactory results, to rid the profession in this country of these objectionable features. It is strange that so good a thinker as Mr. Quinby evidently is should have overlooked the great forces which are at work for the purification of the dental profession in the United States, among which the Dental Protective Association and the excellent dental laws of many of our States naturally come first; and the labours of Dr. H. C. Meriam in his crusade against the patent evil must not be forgotton. Unfortunately, I think, for Mr. Quinby's logic, he has found in his well-arranged list of professional sins committed by quacks and charlatans, masquerading as American dentists, an excuse for a rather wholesale condemnation of American dentistry at large. But we find that in practical life the most successful men have the greatest number of imitators; the best artist's pictures are copied; the most pleasing architectural results are followed in the reproduction of cheaper and less meritorious works; and all because of that never-failing homage which men of all countries and professions, with native shrewdness, pay to success and skill. Were the standard of practical dentistry as high in any other country as it is in America, quacks and non-professionals would now be masquerading as Russian dentists or Swiss dentists, or, begging Mr. Quinby's pardon, as English dentists."

Work Done at the Victoria Dental Hospital of Manchester, during the month of March, 1893:—

Number of Patients attended	1284
Number of Extractions	697
Number of Extractions under Anæsthetics	186
Gold Stoppings	128
Other Stoppings	306
Miscellaneous: advice, temporary fillings, scaling, dressings, &c.	576
Crowns	7
Irregularities	53
Total	1953

J. C. Lingford, L.D.S.Eng.
House Surgeon.

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Original Communications.

PRACTICAL TREATMENT IN GOLD-FILLING OPERATIONS.

By FRANK VOWLES, L.D.S.

IN addressing himself to the consideration of the art and methods employed in filling teeth with gold, the writer is aware that the subject has been exhaustively treated on many occasions; that Dr. Webb, the exploiter of the electrical mallet has brought the results of his untiring patience and marvellous skill before us in a comprehensive treatise; that Ottolengui, in that spirit of professional liberality and freedom, which has done so much for conservative and æsthetic dentistry in the United States, thereby offering an example which our associations and colleges are rivalling, has laid before us methods and improvements which are the fruit and result of many years' individual hard work and practice.

For let it not be thought that the beautiful art under consideration is acquired without painful experiences, as well to operator as to patient. It requires close application, minute attention to detail, infinite patience, considerable force of will, and above all assiduous and constant practice.

As it is impossible to consider the subject in the limited space at disposal in detail, it will be sufficient to study a few practical points on fundamental rules, which, by enlarging, will be found to embrace the whole study, and include within their limits any case which may arise in daily practice.

Firstly, it must not be supposed that all teeth are fit subjects for containing gold in their carious cavities; the dentist must here use his judgment, *ex. gr.*, as a general rule, weakly organised chalky teeth affected by rapid white caries, are unsuitable subjects; similarly in teeth affected by green stain, the decay is difficult to control or finally arrest. But, inasmuch as it is criminally wrong to fill front teeth with amalgam, let it not be supposed, because the bicuspid and molar teeth are respectively out of sight, that the dentist is not just as much called on to fill these with gold if he judges it the better material.

The question, which naturally arises when commencing a filling, is, What gold shall I use? And amidst the bewildering number of beautiful preparations of gold placed on the market by enterprising firms, it would be invidious to mention one manufacturer before another. There is soft gold, foil, tape and cylinders, cohesive gold, in crystalline forms, mats, blocks, ribbon, cylinders, smooth and corrugated foil.

To this question then, I give an explicit answer, it is better to confine oneself to one or two forms of gold, to become thoroughly conversant with their use and application, and then nothing will come amiss.

For the body of fillings, the writer uses a full range of cylinders, Nos. 1 to 5 inclusive, finishing with foil, first No. 4 cohesive in rope or tape, and finally No. 30 or even 40 rolled gold, according to the case.

And here a word or two regarding the preparation of rope from the leaf. There is nothing better for this purpose than an old, soft damask napkin. The size of gold being determined, a third, fourth, or sixth is divided by the card from the book, the gold being torn, not cut, and placed between the folds of the napkin and rolled evenly and without compression, and is then cut into lengths with the scissors. To prevent the gold sticking to the scissors it is generally sufficient to pass the blades between the fingers. By this method gold can be quickly obtained of any size and density, and of absolutely reliable working quality; in fact, any other form of gold can be dispensed with, and any filling completed from beginning to end in this manner.

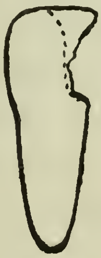
In filling approximal cavities in front teeth it may be necessary to separate these one from the other. For this purpose I prefer the use of tape, especially as the patients can be taught to use it themselves First one thickness, then, next day, two or three being inserted, this is a very good way, as it prevents undue soreness of the teeth, and if followed by the use of good separators, such as Ivory's double-bow, perfect steadiness is obtained. Space having been obtained, and the writer cannot too much insist on the need of free access to the cavity, the rubber dam is applied.

It may not be superfluous to mention a method of rendering the gingival margin insensitive to that generally painful operation of tying the ligatures round the necks of the teeth : a little full strength carbolic acid solution is taken and crystals of cocaine muriate worked into it on a slab, this is worked under the margin of the gum with a Donaldson bristle, and in a few seconds the dam can be passed painlessly and thoroughly up.

The dam and separator having been applied, a keen enamel chisel is taken and the margins of the cavity thoroughly trimmed and shaped.

Of course the question as to access on buccal or labial aspect must be decided relatively to the strength of the walls. All weak enamel must be vigorously cut away, until strong margins are obtained. And here it must be said that if the caries extends towards masticating edge, and leaves absolutely nothing but enamel at masticating approximal angle, that angle must be cut away, or it will inevitably split off under the shock of mastication, rendering the operation unsightly, its place should be therefore taken by gold built up and strapped over a bevelled edge of the enamel.

Access having been obtained, and the margins shaped free from angles and with an easy curve, thus in Fig. 1, representing broken margins of enamel and dotted lines trimmed, curved and flared ; the cavity must be shaped both for retention of gold and due



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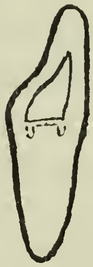

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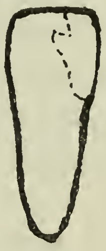

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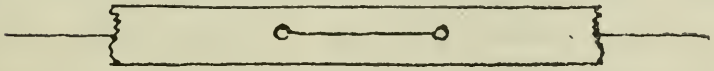

IV

strengthening of its own walls. It may be laid down, that all cavities should be shaped on the one system, the dovetail with easy access.

Working from this rule as a foundation, it remains to consider the best portion of the tooth to mechanically obtain this dovetail. In the tooth under consideration, *i.e.*, the incisor, the best portion is also the strongest, that is at the basal part of the cavity at the neck of tooth.

A sound margin must be obtained and all free enamel above the level of the floor of the cavity cut or scraped off with straight spoon excavator, so as to make as nearly as possible a horizontal floor. A rose burr, very small, size No. 0, D. M. F. Co., is then taken, and the engine being driven at high speed, is run along the floor of the cavity, so as to form a distinct groove in the dentine, well within the enamel. this groove is then deepened at either extremity, labial and palatal. A small wheel burr (same size), is then drilled into these deepened extremities, slightly undercutting them thus, Fig. 2 being horizontal floor and dotted line groove with deepened extremity well within margin.

The rose burr is then taken and a groove run up both palatal and labial walls, wherever there is dentine (enamel must be strictly avoided), until the apex of the cavity is reached, when the rose burr is run in parallel to the crown, immediately under the enamel, and flared off from lower portion of cavity. (See Fig. 3.)

The margins of cavity must then be well flared or rounded, and finally polished with cuttle-fish disc, or well-worn finishing burr.

All dust is now blown out of the cavity with hot blast syringe, the tooth being now ready for the reception of the gold. Take a soft, or unannealed, cylinder of the smallest or No. 5 size, and place, holding two fine pointed pluggers, one in each hand, in deepened extremity of groove on furthest portion of floor from side of access. Do not condense this, but take immediately a small piece of annealed foil of a size to readily enter the groove, and work it in taking care not to perforate or lacerate the gold, then with two, sharp taps of the mallet drive it up. The extremity of the groove is then filled flush, and the other extremity should then be treated in the same way. These two depressions being filled, a longer piece of foil is taken, and tacking it on to the gold in one pit, is run along the groove to the other, thus connecting them. The operation is now fairly started, and the completion is merely a matter of patience and attention to detail. The gold must be packed to mass in the centre rather than towards the walls, taking care as the filling proceeds to fill the more inaccessible portions of the cavity, and well condensing in the palatal and labial grooves. As far as is possible, the malleting must be in the direction of the axis of the tooth, and as direct as possible.

With regard to pluggers, use those with very fine serrations, a freshly ground surface will do. All mallet pluggers should have their working ends parallel to the striking end, whatever angle the curve of the plugger may take between. Numberless instruments are made as mallet tools with angled working faces, they are one and all delusions and snares—and only suitable for hand pressure—as such some shapes can scarcely be dispensed with, such as the C plugger, and one or two other familiar shapes.

Each piece of gold must be condensed before placing the next, and any pellet which shows a tendency to ball up or work refractorily, must be rejected. When the filling reaches the apex, the mortice joint there made must be filled, and although not dependent on it for retention, this keys the filling, and renders it completely secure. Any portion of the masticating angle must now be built up, and the filling completed with 30 foil to give a dense and resistant surface.

The filling is best polished without removing the dam. It must first be well burnished entirely over the surface, and any surplus cut away with corundums, emery or lava strips, emery or sand-paper discs, and finally small rubber wheels with crocus powder and rouge. For a dead gold finish, a cuttle-fish disc with oil will suffice, and make a fine surface. Special care must be taken to finish the cervical edge. Any over-lapping piece of gold must be trimmed off, and finished flush ; here is the weak point of all restorative work, for, if any lodgment is left for food or impurity, retribution is swift and certain in the form of renewed decay.

And here a word of caution may be inserted as to malleting in finishing the cervical edge. Great care must be taken that there is gold between mallet point and enamel, or the latter may be powdered or cracked without knowing it, and a year or two will inevitably bring it to light.

What has been said with regard to the shaping of an approximal incisor cavity, applies equally to all cavities in posterior teeth, excepting that in the majority of cases, the basal groove may be dispensed with.

In bicuspid and molar cavities cut clearly away until there is free access, gold cannot be driven round a corner, so that this must be cut away, and dentine give place to gold. In these cavities a considerable modification of treatment occurs.

Owing to the mass of dentine, it is easier to shape the cavity for retention without interfering so much with the floor of the cavity. It is sufficient to level and slightly widen at palatal and labial aspect. Decided grooves must be carried up the sides for retention, and the enamel of crown cut away and bevelled, care being taken, when enamel is weak, to allow a protecting band of gold to be brought over to bear the strain of mastication and prevent fracture. What may be termed a system of anticipation must be followed throughout in this class of work, for a gold filling like a chain, gives way where it is weakest.

The cavity being prepared, we are now treating of a compound bicuspid or molar lesion, there are two or three modes of filling open to the operator. Perhaps the most preferable being to commence the work with soft cylinders, the mode of working being as follows :—A No. 2 or 3 cylinder is placed neatly against the opposite wall and lightly held with an instrument in the left hand, whilst another is placed parallel to it and condensed, still being held in position by the left hand instrument. This procedure is followed, the gold being held by left hand until the opposite wall is reached, when a smaller cylinder is taken and packed tightly in place, thus keying the row of cylinders in position. A wedge-shaped instrument is then taken (a narrow foot will do) and as many No. 4 cylinders forced into the centre with the mallet as is possible. This forms a soft gold floor for the filling, and will protect the parts with which it comes in contact, much better than hard or cohesive gold. If the cavity is deep another layer may be taken, but sufficient dovetail or mechanical attachment must always be left in the crown to securely fix the filling. There is no difficulty in attaching cohesive gold to the soft flooring, as a little light cohesive foil may readily be driven into the surface and the filling finished cohesively with the mallet.

Another, and very useful way is to use a little phosphate cement for the deep portion of the cavity, taking care to leave the grooves clear, and while this is still soft cohesive gold is pressed into the surface.

The cement is then allowed to set, the surplus trimmed away, and the filling can be proceeded with.

A warm blast from a hot-air syringe quickens and aids the hardening of cement, which is simply invaluable in cases of sensitive teeth and is coming daily more into use among the most careful operators. Still another way is by the use of tin and gold combined, or Robinson's fibrous tin, both of which work very soft, but have very little to recommend them beyond the fact that the tin throws down an oxide which tends to stop caries, somewhat after the action of nitrate of silver.

But we frequently find a cavity which we cannot treat in this way, *i.e.*, when the tooth is decayed low down below the gingival margin, and there is so much tissue lost that a good floor or foundation cannot be formed in the cavity.

Here the best treatment is to wedge away the gum with cotton or gutta-percha, and then fill to the gum level with matrix, with dry amalgam or palladium precipitate. Then proceed with soft gold as before, the amalgam will not darken the filling if the mercury is well expressed, whilst the gold and amalgam form a good union.

An important subject for consideration now presents itself, I refer to the matrix, and I should definitely like to state that its use should as far as possible be avoided for gold. My reason being that with the matrix the filling can only be made flush with the walls, thus losing one of the great advantages of gold as a tooth saver, the toughness and malleability of the metal, allows it to be strapped over flared edges, thus in many cases preventing the certain fracture of an enamel wall for an indefinite number of years.

However, the matrix in many cases is a great help, particularly in posterior bicuspid approximal cavities. A very good form of matrix can easily be adapted in a minute or two, it consists merely of a band or strip of very thin metal, platinum or copper will answer well enough. A long piece of silk is passed through two holes which should be wide enough apart to be outside walls of cavity, the matrix should then be passed up and tied round tooth to secure it, the silk being passed round and round till it is so rigidly in place that it cannot move; it will then be discovered that if the metal be thin enough, that if the walls be flush, the matrix will bulge sufficiently on pressure of the gold to allow of a fair margin being obtained.

An important class of cavities where the services of the dentist are frequently required, are those occurring from what is termed erosion, occurring perhaps more frequently in patients of a rheumatic or gouty diathesis.

The skill and experience of the operator are perhaps here taxed more than in any form of caries, it is certain that nothing demands more care, while it is a doubtful point whether filling does finally arrest the action of erosion. Into that question I shall not now enquire, merely premising that if it delays the loss of the tooth for a few years, it is our duty to fill the cavities.

One of the all-important points is the application of the dam, as many teeth are diseased far above the gum margin. Three holes should be punched, one for the tooth to be filled, and one for its neighbour on each side; the adjoining teeth should then be ligatured, and while the dam is held above the gum margin, How's improved cervix clamp may be applied, which I regard as certainly the best appliance before the profession. Another way is to attach a long silk ligature to the tooth, tying it high, it is slipped over the decay with the end of a small double-ended burnisher, the ends of the silk are then secured to a piece of stick, and an assistant keeps it strained until the operation is concluded, thus resisting the downward tendency of the lip to pull off the silk.

The finishing and polishing of these fillings is easily effected by corundum stones, small rifflers, and small rubber cups, carrying pumice powder and glycerine, finishing with whiting.

It will perhaps, be well now to say a few words about the all-important subject of consolidation. It must not be supposed that the writer is prejudiced in favour of any one method, for there is not the least doubt that ultimate success lies in painstaking attention to detail, and it naturally follows that the man who knows his work will turn out a good operation with most methods. But, after all, the principal party concerned is the patient, and it becomes the absolute duty of the dentist to choose that method which gains the result in the speediest manner consistent with good work. Of course, the earliest method was hand pressure, and as there is at present a tendency to return to olden fashions, so many men are now claiming that it is still the best way.

A leading professor at Harvard is teaching this method, and there are disciples of his who are doing work that rivals the best results from the mallet. But the process is slow and painful.

Small pieces of gold must be used, and great pressure exerted, and the gentleman whose work I have seen in this direction certainly tired his patients more than any mallet would have done.

Perhaps the mallet most generally used in this country, and still largely in America, is the Snow and Lewis, or its imitations. Good work is being done with this—but patients complain more of this than any form of percussion—the sense of anticipation when the blow is coming before the spring is released, the possibility of the tool slipping and injuring margins, and lastly the slowness, each blow requiring a special pressure, are reasons all against this otherwise beautifully designed instrument.

Then there is the electric mallet which does the best work in the world, but is also slow—as the gold used must be small—each pellet placed by hand, and the smallest of points used in malleting, with very fine serrations to prevent chopping and perforation of the foil.

Certainly in our experience the most useful of machine tools is the Bonwill improved mechanical engine mallet. The blow can be adjusted to a nicety, it is rapid in the extreme ; we frequently use this instrument in combination with a Cuttriss electric-motor, in an S.S.W. clutch handpiece, at 1500 revolutions at 10 volts ; it is easy to insert a whole book of gold in an hour with an assistant feeding, the gold is beautifully condensed, and contours can be worked with the greatest nicety.

The writer has removed the whole of the serrations on the points used with this tool, using simply the ground surface, and finds it works even better in this manner, the rapidity of the blow somewhat assimilating the process to Herbst's rotatory system.

Last, and not least, we must consider the hand-mallet, and to this used with judgment, we give the preference. In the hands of a competent assistant the work is rendered a certainty, the operator can sit on his stool and work with the utmost precision.

It is possible to work in this way with two assistants, one to place the gold and the other to mallet, and it is easy by these means to condense the gold as quickly as the assistant can feed the instrument. But your assistant must be trained or dire will be the accidents, and disastrous the results. Of course the advantage of this mode of working being the fact that the operator can use two instruments—one being a foot to place, and the other a point to condense. I would reiterate the most important point, that it is impossible that the impact from a mallet can be taken on an inclined plane, in other words, your points on their serrated surfaces must be parallel with the striking end of the instruments, therefore let their angles and curves be few and simple, and the force exerted be as nearly direct as possible.

I would urge upon our younger operators to practice this method as much as possible. If it is thought that a gold filling will save the tooth better than amalgam, do it, although it may be more difficult, and it is impossible to obtain a remunerative fee, for it is only by practice facility is obtained.

REPORT OF SOCIETY.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Usual Monthly Meeting took place on the 5th ult., the President (Mr. Bowman Macleod) in the Chair. There was a full attendance of members.

The minutes of the previous meeting having been read and confirmed, Messrs. T. H. Clarence and A. Curling Hope signed the obligation book, and were duly admitted members of the Society.

A Case of Replantation.

The President narrated the particulars of a case of replantation in his own practice, remarking that although cases of this kind were neither new nor had been unsuccessfully treated in the past, each succeeding case was worthy of remark. The case he wished to bring to their notice was that of a strong and healthy young fellow aged 13 years, who in the first instance came to him for the treatment of a slight abnormality, for which he took models. The under model was the more interesting of the two, showing four well-formed molars, two temporary and two permanent; the upper model showed nothing more unusual than the retention of temporary canines, but this model came in most serviceably later, for about a fortnight afterwards the lad met with an accident, which resulted in the eye-tooth being broken, and the lateral knocked right out, the central incisor at the same time being driven into the mouth. The lateral was found some thirty hours after the accident, but the broken crown of the eye-tooth was not discovered. The lad's mother came to him describing the accident and asking what was to be done, whereupon Mr. Macleod, not knowing that it was his former patient, recommended her to send the boy to him. On seeing him he at once recognised him, and was able to show that the broken canine was only a temporary one, and the permanent one would make its appearance in due course. The lateral incisor, after being washed in warm water, followed by a washing in weak solution of perchloride of mercury, was replaced, the pulp having been previously removed, and the canal filled. The following day a small vulcanite plate, with the addition of a small cap, was made, in order to prevent the tooth from becoming elongated. The President also showed a case of cemental union of a wisdom tooth extracted by Mr. Robb, of Dundee. The tooth, which is now the property of the Odonto-Chirurgical Society, was removed for the purpose of extracting the second molar with ease. There was no other abnormality noticeable.

Mr. RUSHTON showed a lower wisdom and supernumerary in which cemental union existed ; also a second and third molar from the upper jaw.

Mr. JAMES STOCKEN asked what strength of perchloride of mercury the President used ? He thought it should necessarily be very weak, seeing that it combined with albumen and gelatine. Referring to the case of replantation, Mr. Stocken remarked that he had treated a case with a very diluted solution of carbolic acid some eleven years ago, and the tooth was still firm.

The PRESIDENT replied that the solution was practically 1 in 2,000.

Mr. STORER-BENNETT remarked that he believed that the term "cemental union" was intended to describe teeth which had at one time been separate but had become joined by cementum, whereas he thought that the instance put forward as one of cemental union by the President would in reality be found to be a case of odontome.

A Case of Anthrax.

Mr. H. G. READ, prefacing his remarks with an apology for bringing so purely a surgical case before the Society, described a case, which upon seeing the patient he was led to diagnose as one of anthrax. The patient was a lad aged 16, and was engaged in stuffing chairs with horse-hair, imported mostly from China, but had latterly used that of Russian origin. He applied to St. Bartholomew's Hospital in April last for treatment of a swollen neck. Within two days of his application he had been in his customary health, and then noticed for the first time a small pimple on the point of the chin, which rapidly developed. On the following day the neck began to swell, increasing in size with great rapidity. Mr. H. B. Read saw him in the Dental Room of the Hospital, and found him suffering from a decayed tooth, which he extracted. Noticing the pustule on his chin, which at that time was a yellow vesicle with a very red areola round it, he suspected anthrax, and recommended his admission as an in-patient. The lad looked very ill, though he stated he did not feel so ; this, Mr. Read remarked, was not an uncommon circumstance with this disease. The following notes were taken :—In the middle line on the point of the chin, immediately over the symphysis menti, was a small black slough surrounded by a red, though not very inflamed, areola. No vesicles could be made out, and there was but little induration at the base of the postule. The neck was swollen by nearly half its natural size. Some secretion taken from the sore was examined microscopically, but though numbers of various bacilli abounded, the presence of anthrax was not revealed. A small quantity of the secretion, however, was injected into a guinea pig, causing its death the same evening, and its blood was found to be swarming with anthrax bacilli. At 7 o'clock of the evening following admission, the sore, with the areola round it, was removed by the knife, the patient's temperature at the time of the operation being 104·2. He passed a good night, and twelve hours after the operation his temperature had fallen to 98. A week later the patient was perfectly well.

Mr. ROUGHTON remarked that the case to which they had just listened brought home the importance of dental practitioners having some surgical knowledge beyond that directly required for treating the teeth. Had the boy gone to a less able dentist than Mr. Read, he would probably have met with the same fate that attended a similar case which came under his observation some little while back. A patient at the Royal Free Hospital had a black-looking place on the neck surrounded with vesicles, he (Mr. Roughton) scratched one of the vesicles and microscopically examined the serum which came from it, when it was found to be swarming with anthrax. Although the malignant postule was excised, the man died a few hours afterwards.

Bony Anchylosis of Temporo-maxillary Joint.

Mr. A. Alex. Matthews read notes taken jointly by himself and Mr. Horrocks on a case of unilateral bony anchylosis of right temporo-maxillary joint. A lad, aged 13, was admitted to the Bradford Infirmary on January 23rd last, with fixation of the lower jaw. For several years the patient had been unable to separate his teeth, and food was taken by thrusting it between them with his fingers. The early history was somewhat obscure, but from the age of three upwards he had facial trouble, and when seven years old it became necessary to remove a piece of necrosed bone through an opening by the ear. When admitted, a depressed cicatrix existed behind and below the angle of the jaw on the right side, and the tissues over the right ramus were much thickened. On placing the fingers over the temporo-maxillary joint, no movement could be detected on the right side, but slight movement was felt on the left side. On passing the finger into the mouth, it was discovered that the mucous membrane was bound down to the bony thickening along the front of the ramus. On January 27th, the patient having been anæsthetised with chloroform, a linear incision, three inches long, was made a quarter of an inch above, and parallel to the zygoma. The tissues were dissected down, and the upper part of the jaw exposed. Near its upper part the jaw was divided with an Adam's saw, the division being completed with bone forceps. The jaws were then separated about an inch by a wedge gag, and a small piece of bone was removed from the back of the ramus. The wound was sutured, and healed by first intention in four days. Four months later the patient felt in excellent health, and could eat without difficulty or inconvenience. Reference was then made to cases previously recorded by Mr. Christopher Heath, and Dr. Abbe, of New York.

Mr. Roughton remarked that there was one point which he did not quite follow, but possibly he did not correctly hear Mr. Matthews when he understood him to say that although there was bony anchylosis on the right side and no movement, yet on the left side a certain amount of movement was observable. Possibly he could add something which would help to explain this point, which seemed rather difficult to understand, and he might be able also to say something as to the etiology of the case.

Mr. MATTHEWS replied that with regard to the movement on the left side only, the boy was directed to open his mouth, and the effort he made to do so produced a slight movement in the articulation, which could be detected by placing the fingers on the joint on the left side. It had been very difficult to get any history of the case ; there had certainly been no ear trouble, and it seemed to resolve itself as much as possible into one of the teeth, though he would not like to state definitely that that was the case.

Chloride of Ethyl.

Mr. W. RUSHTON gave some account of his experiences as to the usefulness of chloride of ethyl, which he had been using for about eighteen months. It was offered by the depots, put up in various ways, but he preferred the tubes with a screw-cap known as "Benque's." When the cap is screwed down, and the fluid kept in contact with it there is no loss by evaporation. For this reason, and also for the reason that it is more generally useful than the straight nozzle, he preferred the bent nozzle, as with it the drug can be kept in contact with the cap to the last drop. It was not advisable to have a nozzle with too large a bore, as in that case the supply would be too plentiful and the fluid would run about in the mouth in an undesirable manner. A napkin placed behind the spot to be frozen, and over the tongue, prevents any excess from going down the throat. He found it of very little use in extractions, but it was a useful substitute for nitrous oxide gas in cases where the latter was objected to. He also found it useful for the removal of stumps, by anæsthetising the portion of the gum freely, the stumps might be removed without any pain whatever. He employed it for all sorts of incisions in the mouth with advantage, and in incising an alveolar abscess it was of extreme use. It alleviated the pain in crowning when driving up the crown. It might be used very beneficially when drilling into exposed pulps, but in cases of sensitive dentine, in his experience it was worse than useless.

Antral Disease.

Mr. W. R. ACKLAND, in opening a discussion on the treatment of antral disease, confessed that he hoped rather to elicit information than expected to give it. As dentists, he presumed that they would only concern themselves with the question of pus in the antrum, as to the cause, whether it originated in the nose or the teeth. It would not be necessary for him to waste much time on the symptoms which would be well known, but would only remark that he had seldom seen neuralgia exist except when the nose entrance had been stopped. As to diagnosis, he would be glad of some information. According to his reading, one means of diagnosing was to percuss the palate with a round-headed burnisher, but he had never been able to draw any reliable inferences by this method. · Electrical illumination he believed was also employed, but he did not know how that was used. Mr. Christopher Heath in his "Dictionary of Surgery" said, that one could diagnose it from ozoena, from the fact that the patient is not conscious of any fœtid odour in ozoena, but of course ozoena might exist concurrently with antral disease. With regard to treatment he did not know whether anyone had noticed in the British Medical Journal, Miculicz's operation for perforating the inferior meatus. He (Mr. Ackland) had tried it by means of a drill used with a dental engine but did not get any successful results, he had special drills made quite as broad as could be driven by the engine. The operation was performed under gas. Then as to the ordinary operation, which he presumed most dentists practised—that of opening the alveolus—his plan was to put the patient under gas and ether, using Dr. Hewitt's combined apparatus, and employing an ordinary elevator, putting a cork on, and then making the hole. He kept the hole patent, and by means of a small plate kept a spur, which extended into the hole as far as to fairly reach above the floor of the antrum, in position. This plate was one of his own contrivance, and had no tube, but was made to clasp round the tooth on either side of the space. The patient was able to take out the plate himself, and was instructed to wash out the hole two or three times a day, using a small black vulcanite syringe. With reference to antiseptics, the antral lining had a tendency to get used to any antiseptic employed, and it would be probably agreed that the only plan was to ring the changes on them. He usually commenced with hot water, and followed on with warm boracic lotion, continuing with Condy. Zinc chloride he used in strong solution; in other cases he had employed zinc sulphate and phosphoric acid. In one case in which he was rather interested the patient went on from month to month assiduously syringing with almost every antiseptic without any result, he then tried a mild solution of chlorate of potash, when the case at once yielded.

Mr. S. J. Hutchinson was inclined to think that cases were not unfrequently treated from a dental point of view which had a deeper origin than they suspected. Take for example a case of caries of the turbinated bone, due to polypus.

Mr. James Stocken said that cases which had come under his observation he had treated with chlorate of potash and solution of iodine, which he found answered very well. The mechanical contrivance he employed was different to that used by Mr. Ackland, his tube was hollow and was of a slightly conical form, h .ving a gold flange. The appliance was kept in its place by soldering gold spring wire, in a spiral form to it, the patient was able to syringe through it without inconvenience. He thought the hollow tube better than a solid one as it allowed the pus to escape.

Mr. H. G. Read rather disagreed with Mr. Stocken as to the advantage of the hollow tube, because of the difficulty of keeping it clean. In one case he plugged the cavity with dry iodoform gauze two or three times a week, and the patient made a very good recovery.

Mr. Boyd Wallis regarded the electric light as a very useful means of diagnosing antral disease. Dr. Scames Spicer's paper, read some two or three years ago before the Society on the subject would no doubt be remembered.

Mr. Storer Bennett mentioned that he had placed on the table a large selection of specimens illustrating antral disease received many years ago, he thought that they would help to an understanding of the many difficulties met with in treating these cases. Owing to the divisions in the floor of the antrum it was a difficult matter to wash out a cavity thoroughly. The plate mentioned by Mr. Ackland was a very useful one, they had used it at the Hospital for a long time and it served the purpose admirably.

Mr. G. Cunningham thought that importance should be attached to the fact that in addition to the bony divisions referred to by the last speaker, the mucous membrane ran into large folds, making a number of pockets, and thus increased the difficulty of washing out. Mr. Cunningham also referred to Dr. Simon's paper, read some time previously, which supported the view that the disease was of much greater frequency than generally supposed.

Mr. Roughton referred to the obscurity which surrounded cases of antral disease owing to the fact that, as far as he was aware, no one had hitherto seen the inside of the antrum so as to be able to form a definite conclusion as to the cause of the pathological condition. It was his intention when opportunity presented itself to perform the following operation :—Draw the cheek well back, and divide the mucous membrane at the sulcus between the cheek and the gum, so as to expose the interior wall of the antrum, and then with a knife make a hole, cutting three sides of a small square so as to turn up a trap door, and thus enable him to pass an electric light into the antrum. He had frequently performed the operation on the dead subject, but had not yet done so with a living patient. He thought that hitherto they had been working very much in the dark, and their only progress in the treatment of this disease would be made by learning something more about the causes which produced the pathological conditions.

Mr. J. Howard Mummery mentioned a chronic case he had some time ago, where dead bone existed which was cured for a period of about five years by scraping down the dead bone, but after that it recurred.

Mr. W. A. Maggs presumed that Mr. Roughton would not perform so drastic an operation as he had mentioned in all cases.

Mr. Roughton replied that of course he would not advise such an operation except in cases that had gone on for a long time and would not yield to treatment.

Mr. Ackland having briefly replied, the Society adjourned until November 5th, when, it was stated, Mr. Hopewell Smith would read a paper on "Some Observations on the Cellular Elements of Dental Pulp."

APPOINTMENT.

Silbey W. Read has been appointed Assistant Dental Surgeon to the National Dental Hospital.

For mending broken cast iron, the following is recommended : Take 2 ounces of sal ammoniac, 1 ounce of sublimed sulphur, and 1 pound of cast iron filings ; mix in a mortar and keep the powder perfectly dry. When it is to be used, mix it with twenty times its weight of clean iron filings, grind the whole in a mortar, wet with water till it becomes a paste, and apply to the parts to be mended. It will become after a time as strong and hard as any part of the metal.—*Office and Laboratory.*

THE DENTAL RECORD, LONDON: JULY 1, 1893.

THE QUESTION OF TIME.

"TIME and tide wait for no man" is so old a saying that we almost feel an apology should be offered for venturing to quote it. Yet we do quote it, for the reason that it brings the truth home to one in a particularly happy and concise way. A truth it is too, that seems to haunt one as the clock ticks out the seconds and the hands point out minutes quickly passing into hours. The sun no sooner rising than it sets, a week begun and ended, a whole year quickly rounded off. Perhaps it matters little; why should it matter much? We cannot think it does much matter so long as the time has been long enough for us to do that which we would and should. But it is precisely here that the doubt creeps in. How often, for instance, do we not regret that we cannot do that which we would? "We have no time." How barren of forward progress in matters relating to our art are the years going by. We have ideas, 'tis true, we note lines of research and thought which would bear following up, which would, we think, be fruitful in result, but here, far too often, we rest. The idea remains mythical, and the note a bare head-line. It is a matter for regret how few of the very numerous dentists now upon the register contribute anything at all to our scientific data, our mechanical processes, our professional literature and life. It is possible that many find more recreation in devoting leisure moments to non-professional pursuits and thought, indeed, we know that many do so find rest after the daily work. But surely it is a pity that we should find nothing but work in our professional life, a pity if our interest does not attach itself to the matter of our daily toil. It seems to us that the work done under such conditions must soon become irksome in the extreme. Many men we know store up these notes and ideas against the day when they shall be able to give up active practice; we fancy that both stand but poor chance of recognition when the day arrives. Regulate time now, and it lengthens considerably. The busiest man is often the one with most spare time. Order and arrange the work of the day, and much more is completed, and in the same way the leisure moments may be made of much more use. It is said of Sir Robert Hart, the Inspector-General of Customs of China, one of the busiest of busy men, that he does not waste a moment; punctuality has become a habit, and meals at home are served with clock-like regularity; yet it is noted that by using day by day the few moments between his coming into the room and lunch being served he has mastered a treatise of many volumes. We are not all cast in the same mould. It is possible we may not all look at those moments, when "we chew the cud of sweet and bitter fancies," as waste time; but we certainly might, most of us, do more for our profession were we more systematic and less sleepy in those moments we call our own.

Notes and News.

By the resignation of Mr. S. J. Hutchinson, a vacancy has been created on the Board of Dental Examiners of the English College. The election takes place early in July. There is always so much competition for this post that we cannot but look forward with some curiosity to the result of the election. We also note the resignation by Mr. Hutchinson of the appointment of Dental Surgeon to the University College Hospital. We understand this vacancy has been filled by the election of Mr. Spokes.

There appears to be a keen struggle for the vacant seats on the Council of the Royal College of Surgeons. One of these vacancies results from the sad death of Mr. Marcus Beck, but the others are due to the expiration of the term of office of three members, and, as only two of these present themselves for re-election, at least two new men must find seats.

Brilliant was the success of the Concert in aid of the building fund for the Dental Hospital of London. St. James's Hall may be fairly described as full, pleasantly full, with but few gaps and no undue crowding. The concert was exceedingly good, and much appreciated by the audience.

The following eminent artistes kindly gave their services :—

Madame Newling, Miss Margaret Hoare, Miss Clara Butt, Mr. Ben Davies, Mr. Watkin Mills, Mr. Roger Peck, Mr. Norman Salmond, Solo Violin—Miss Frida Scotta, Solo Violoncello—M. Joseph Hollman, Solo Pianoforte—Madame Frickenhaus. The Guildhall Choir (200 voices), under the direction of Sir Joseph Barnby, (Principal of the Guildhall School of Music). At the Pianoforte—Mr. Wilhelm Ganz. Madame Valleria who had also kindly promised to sing, was prevented by indisposition.

Not the least pleasing item in connection with the concert was the balance of £175 available for the purposes of the charity. It certainly speaks well for the enthusiasm of the students at the Hospital, that they should have been able to organize and carry through a success of this kind, and great thanks are due to the energetic Secretaries, Messrs. W. Francis Mellersh and C. H. Pascal-Taylor.

We understand that the funds now available for rebuilding this Hospital amount to about £9,105. That the sum should be so large is a matter for congratulation, but we note by a letter in the *Times*, from the Dean that the public do not at all respond in a generous manner.

On July the 17th the New Laboratory and Dental School Buildings in connection with Guy's Hospital will be opened by Sir John Lubbock, Bart., M.P., F.R.S. In honour of the event the Governor and Staff are entertaining a company at lunch.

The attention of our readers is called to the appeal in our Correspondence Columns on behalf of the widow of the late Mr. Minett.

At the last meeting of the College of Surgeons, the following gentlemen having passed the necessary examinations were admitted Licentiates in Dental Surgery:—Austen, Leslie Gillmore, Charing Cross and Dental Hospitals; Bates, Herbert Astley, Mason's College and Dental Hospital, Birmingham; Beverley, Edgar Adolph, Charing Cross and National Dental Hospitals; Butler, William Reginald, Guy's Hospital, Dental Department; Fairbrother, Aubrey Harry Burne, Charing Cross and Dental Hospitals; Gillet, Richard William, Charing Cross and Dental Hospitals; Hall, Edward Caleb Joseph, Charing Cross and Dental Hospitals; Ham, Hadley Herefoot, Charing Cross and Dental Hospitals; Hope, Vacey Linnington, Charing Cross and Dental Hospitals; Keay, Colin, Guy's Hospital, Dental Department; Lukyn, Herbert Edward, Charing Cross and Dental Hospitals; Lyne, William Henry, Guy's Hospital, Dental Department; Makepeace, Alfred Joseph, Guy's Hospital, Dental Department; Manton, G. Sidney Frederick, Guy's Hospital, Dental Department; Morgan, Frederick John, Guy's Hospital and Dental Hospital; Morley, Frank, St. George's and Dental Hospitals; Oram, Charles Henry, Guy's Hospital, Dental Department; Pritchard, Francis Edwin, Guy's Hospital, Dental Department; Saul, William Henry, Guy's Hospital, Dental Department; Simmons, Thomas Pybus, Charing Cross and Dental Hospitals; Tomlinson, John William, Charing Cross and Dental Hospitals. Twenty-one candidates were referred back to their studies for six months, and one for twelve months.

Fifty per cent. failures is a pretty large average and speaks well for the vigilance of the examiners. Much as we sympathise with the twenty-one referred candidates, one cannot help feeling that it is a wholesome sign of the times. The curriculum is not intended to be a dead letter; the two years of hospital work must be taken seriously. It is the fashion to decry grandmotherly legislation, and we may perhaps be thought out of date if we were to urge a greater oversight on the part of school authorities during the students career, still we cannot help thinking that many a man would work far better if it were made more a matter of compulsion.

One maker of Anæsthetic Nostrums does not take kindly to Dr. Kirk's paper in the *Cosmos*, which we reprinted in our last issue, to wit, the Atrophone Manufacturing Co. They have sent him a long rigmarole which he prints in the June issue of the above-mentioned journal. Practically they question his analysis, but really they admit his point, *i.e.*, that the preparation contains cocaine, less than one per cent. They say they are willing to publish an analysis, but avail themselves of an excuse for not doing so. Surely, this is very funny. The public are specially warned in the circular issued by the Atrophone Manufacturing Co., to beware of all other "so-called local anæsthetics," "do not trifle" say they, "with those cheap cocaine preparations" and yet, forsooth, they now admit Atrophone contains cocaine. We would not for a minute insinuate that this is a "*cheap* cocaine preparation" we actually do not know whether it be dear or cheap, but, other things being equal, we candidly confess a weak preference for the cheap.

A case of fatal hæmorrhage following the extraction of a tooth is recorded.—It seems that the young man noticed that the bleeding from the socket did not stop, but took no further notice of the fact, and went peacefully to bed. In the morning he was found dead in the middle of a pool of blood. Such cases as this remind us that we cannot be too careful to warn patients to seek advice should bleeding not stop. This is especially so, as was, indeed, the case in the above instance, when the patient has to go some distance to reach home. It is very evident that the exertion incident to the journey may determine a hæmorrhage, when there is any predisposition thereto. Clearly there is an absence of that rest so conducive to the natural arrest of hæmorrhage. This poor fellow seems to have been born under a particularly unluckly star, for it is recorded that one sister died some years ago from an accident, a calamity which so preyed on the mind of another sister that she was bereft of her reason and had to be put under care in the asylum at Marburg.

Mr. Vowles on another page calls attention to the fact that by keeping the disc wet, whilst polishing a gold filling a dull surface is obtained. Ninety-nine out of a hundred doubtless know, but for the sake of the one we may point out that a bright polish has, under certain lights, a black appearance. Hence the preference given by some to a dull finish.

The *Chicago Herald*, with all the graphic wordiness so dear to some journalists, describes a scene during the extraction of a panther's tooth. Altogether we are presented with a picture such as would have delighted the "fair" in the old gladiatorial days. Instances of dental operations on animals are by no means scarce; we have heard of gold fillings inserted into dog's teeth, and of many others. But perhaps the most gigantic is that recorded in the transactions of the Odontological Society, and concerned the late lamented elephant, Jumbo.

The report of the *Lancet* Commission on Anæthetics is now published, and from the report Dr. Dudley Buxton thinks the following deductions may be drawn:

1. That the death-rate under anæthetics heretofore has been unduly high, and may, by improved methods and greater care, be lowered.
2. That ether when properly given from an inhaler, permitting graduation of the strength of the vapour, is the safest anæsthetic in temperate climes for general surgery.
3. That nitrous oxide gas should be employed for minor surgery, and should replace chloroform in dental surgery.
4. That chloroform, when given by a carefully trained person, is a comparatively safe body, but is not, in any case, wholly devoid of risk.
5. That no age or nation is free from danger under anæsthetics.
6. That the perils of anæthetics, however slight, demand that the undivided attention of a duly qualified and trained medical man should be given to the administration of the anæsthetic.

With these deductions we most willingly agree, but in the exigences and difficulties of country practice a longer period of anæsthesia than that afforded by nitrous oxide is often almost a necessity. Perhaps this is hardly appreciated by Dr. Buxton, and it would be interesting to hear from this authority whether he would prefer two or more inhalations of nitrous oxide to a prolonged administration of ether.

With regard to nitrous oxide we reprint the report at length on another page, and we may draw attention to a note given in connection with chloroform.

"The larger proportion of deaths are reported as having resulted from initial heart failure, in opposition to the view to which the physiological researches of the Hyderabad Commission have led. That these conflicting views are reconcilable seems to us to be possible, at least in many cases. The reporters of numerous cases refer to *failure of the pulse* as occurring before that of respiration, and it is undoubtedly true that although the pulse does fail, yet the actual heart action continues for some time after pulse failure. This explanation, however, seems hardly to apply to those cases of *sudden death* which occurs at the commencement of chloroform anæsthesia, nor can these deaths be explained, as is pointed out above, as being due to fright, and not to the anæsthetic. The view enunciated by the Committee of the Royal Medical and Chirurgical Society is thus expressed. "The strongest doses of chloroform vapour, when admitted freely into the lungs, destroy animal life by arresting the action of the heart.""

The new Hon. Sec., Mr. John Ackery, of the Benevolent Fund connected with the British Dental Association, is showing a most desirable zeal in obtaining new annual subscribers. It certainly is rather a slur on the Association that such a small percentage of members should support the fund, and in seeking for a reason, it occurs to us that the objects of the fund may not have been brought clearly to notice of the members. Most people also look for results, and we, for one, should be happy to publish any communication which demonstrated the usefulness of this charity.

Apropos of the discussion on the "Diseases of the Antrum," by the Odontological Society, which we publish on another page, it is interesting to recall the fact that the first description of this air sinus appeared in the days of the Commonwealth in "Corporis humani disquisitio anatomica," by Nathanael Highmore, published 1651. In this work Highmore narrates the history of a woman, who for many years had suffered from toothache, and for this had nearly all her teeth extracted, though without any lessening of her symptoms, until the left upper canine was also removed, which was followed by a considerable flow of pus from the socket. Overcome by this, she is said to have herself investigated matters with a silver probe, and thought that with this she could reach up to the eye. In still greater trepidation, she now passed in a feather, shorn of its barbs; this almost disappearing, she now came to the belief that the mischief extended far up into the cranial cavity, whereas, of course, as Highmore explained to her, the feather had become twisted up in the cavity of the antrum.

It is announced that the King of Italy will inaugurate the Eleventh International Congress of Medicine, to be held in Rome, September 24 to October 1, 1893, on the 24th of September. The work of the Congress will begin, in the nineteen Sections, on the morning of the 25th of September. It will be continued in accordance with the arrangements to be made and published both for the general sessions and the Sections. List of the Series:—1. Anatomy: 2. Physiology: 3. General Pathology and Pathological Anatomy: 4. Pharmacology: 5. Internal Medicine: 6. Diseases of Children: 7. Psychiatry, Neuropathology, and Criminal Anthropology: 8. Surgery and Orthopedy: 9. Obstetrics and Gynæcology: 10. Laryngology: 11. Otology: 12. Ophthalmology: 13. Odontology: 14. Military Medicine and Surgery: 15. Hygiene: 16. Sanitary Engineering: 17. Dermatology and Syphilidology: 18. Forensic Medicine: 19. Hydrology and Climatology. The fee for admission to the Congress is twenty-five francs, or five dollars.[1] It entitles to a copy of the Transactions of the Congress. Papers for and communications to the Congress, must be announced on or before June 30th, 1893. A brief abstract of every paper and communication, with their conclusions, must be sent to the committee on or before July 31. All of them will be printed and distributed to the members by authority of the President. Such as arrive after that date cannot be expected to find a place on the regular order of business, and will be accepted only if time will permit. Fifteen minutes are allowed for the reading of a paper or communication. In the discussion every speaker can have the floor but once, and for five minutes only. To close the discussion the author of the paper is allowed ten minutes. Additional time may be given him by the President, by special resolution of the Section, if the importance of the subject under discussion appears to require it. The official languages of the sessions are Italian, French, English, and German. We are pleased to be able to note that the provisional committee has made arrangements with the different Italian and foreign railways and navigation companies, in pursuance whereof special reduced prices have been granted on the steamers and railways of this country, and of the countries which the members of the Congress are to traverse. In Italy the members of Congress will find tickets for round trips, starting from Rome; they will thereby be enabled to visit the most important cities and the various universities. The ladies of the members are to be specially cared for, and festivities of various kinds are to be arranged.

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[1] Money-order or check to the Treasurer, Professor Comm. L. Pagliani, Rome, Italy.

Journalistic Selections and Abstracts.

A CASE OF EXCESSIVE HYPERTROPHY OF THE GUMS.

By J. W. Hisey.

The patient, a well-developed Hebrew boy, H. K., age fifteen, presented himself for treatment of enlarged gums, which were growing rapidly, producing considerable deformity of the mouth, greatly interfering with speech and mastication. The pathological growth, which extended in an unbroken line the entire length of the alveolar border of both upper and lower jaws, also dipping into the floor and roof of the mouth, internally and externally, to the extent of three-quarters to seven-eights of an inch, where it ended abruptly, being more pronounced upon the buccal surface.

His father and mother having died when he was quite young, I was unable to trace his history or family record back farther than his second year, at which time, as I learned from parties who adopted him, he had enlarged gums and no deciduous teeth. At that age they had his gums lanced time and again, and yet no teeth appeared. He entered the Jewish Orphan Asylum of Cleveland, O., when but five years of age, where I ascertained that he had a few deciduous teeth which erupted very late, were few in number, very rudimentary, were soon loose and shed. Of the permanent teeth, he has but six visible, one superior left central incisor, three inferior bicuspids, and two molars, and they are completely embedded in the morbid growth, which is a dense, inelastic, firm, unyielding tissue, having the natural rosy hue of the normal gum. There is no doubt that the hypertrophy was present at birth.

In the median line corresponding to the space between the central incisors is seen a shallow groove or depression, which extends externally in a vertical line from the frænum of the upper lip, to the margin of the growth, partially dividing it into lateral halves.

In thickness the growth on the superior jaw measures on the free margin in front one-half inch. It gradually widens from this point backward to a greater extent on the right side, until it reaches a point corresponding to the wisdom-tooth, where it gives a measurement of an inch in thickness. The measurement of the lower jaw is slightly less. The mucous membrane covering the growth is comparatively smooth, presenting no abnormal papillæ, but the eminences and depressions mark plainly the positions of the imbedded teeth. The crowns of the erupted teeth are partially overlapped by folds of this tissue, which in the lower jaw becomes inflamed, producing a fœtid discharge, similar to that which sometimes occurs in connection with impeded eruption of the wisdom-teeth.

The following report of the surgical treatment of the case is furnished by Dr. M. H. Cryer, chief of clinic, Hospital of Oral Surgery, Philadelphia, Pa.:

The patient was brought by Dr. Hisey to the Hospital of Oral Surgery connected with the Philadelphia Dental College, February 17th, 1893. After a minute and careful examination by the surgeon in charge, Professor James E. Garretson, it was decided to remove the growths by two operations, *i.e.*, that of the upper jaw on the following day, February 18th, 1893, and the lower as soon as the patient had recovered from the shock of the first, and the parts had become sufficiently healed.

The First Operation.—The growths were very large, making the lips so tense that it was only possible to open the mouth or separate the jaws to a slight extent. It was therefore found necessary to divide the upper lip in the median line, and make an incision below and curving around the wings of the nose; then dissecting each half of the lip from its attachment to its respective side of the jaw, the parts being held back on each side by assistants.

An incision was made commencing at the region of the tuberosity on the left side above the abnormal growth, and extending around externally to the tuberosity of the right side, a similar incision being made on the inside; then with a circular saw driven by the improved surgical engine a great portion of bone and some of the roots of the teeth were cut through. In the anterior portion of the mouth where the incision was made above the crowns of the permanent teeth, the engine worked well, but posteriorly the saw came in contact with the crowns of the molars. Here the bone-cutting forceps were used to complete the section. The remaining soft tissue was cut away by the use of the knife. All of the mass except the four teeth, was taken out in one piece. Afterward the second left bicuspid, which was unfortunately lost, and the roots of the teeth that had been cut through by the engine —were extracted, the ordinary extracting forceps being used. Succeeding this, suitable burs were employed to remove any remaining portions of the growth and to rid the face of the bone of any ragged remainder of the alveolar process. On the right side, the antrum of Highmore was exposed. After the parts had been well washed out with pure phénol sodique, and hæmorrhage was under control, the wound made in the lip was closed by using three ordinary hare-lip pins for the median cut, and making a figure eight with soft white cotton wrapping twine around each pin. A few stitches were made to unite the alar cuts.

Treatment.—The lip was dusted with iodoform, and a piece of lint saturated with twenty-five per cent. solution of phénol sodique was placed over the pins and around the wings of the nose, a light bandage being used to hold the lint in place and to assist in protecting the parts. A mouth-wash, composed of a teaspoonful of equal parts of compound tincture of capsicum and myrrh to a glass of water, was frequently used. This preparation has a stimulating effect, and acts as a disinfectant. On Monday, two days after the operation, two of the pins in the lip and half the stitches were removed, and an adhesive strap placed across the lip to give it support. On the third day the remaining pin and all save two stitches were taken out. On the fourth day the remaining stitches were removed. The internal wound improved very rapidly, so much so that in two weeks' time it was nearly covered over by new membrane, and the patient was in condition to have the second operation performed, but on account of other pressing cases at the clinic it was deferred one week, viz., until March 11.

The Second Operation.—After the patient was etherized, the upper lip was found to be so relaxed that, together with the absence of the upper tumour, sufficient room was given for the ablation of the lower one without external incision, although the engine-saw could not be used to so good advantage. The operation was performed otherwise like the first one, except that the tumour was divided in the centre, and the right and left halves were taken out separately. The same mouth-wash was used as before. The parts quickly granulated, and were soon covered by new membrane, excepting one point, which gave considerable trouble; on passing a bistoury into it, a twelfth-year molar was found. It was left in for a time to see if the parts would tolerate it; but as it still gave trouble it was extracted, when the parts soon showed signs of getting well. The general hæmorrhage in both operations was profuse, but none of the vessels were large enough to be ligated. A section of the tumor under the microscope showed it to be of a fibrous nature.

The patient writes, under date of April 28th, seven weeks after the last operation, that the parts are entirely healed; his general health is very good, so that he is able to return to his work; that he finds less difficulty in articulating than he had previous to the operation, and that the improvement in his speech and general appearance is the subject of favorable comment by his friends.—*Cosmos*.

HARD RUBBER OBTURATORS

By J. Adams Bishop, New York.

The advantages claimed are:—first, the simplicity of its construction, which allows of its being made and adjusted in a short time, compared with a velum instrument; second, the plate being made of one piece, and having a good support in the mouth, sustains all the soft parts in the action of talking, eating, and drinking; third, the heat of the mouth has no effect on it as on the soft velum, which after being worn a month loses its form; fourth, another point in its favour is the ease with which it is kept clean, the finely-polished surface causing the mucous, etc., to pass off from it without remaining as it does on the soft velum.

There being no forward action whatever from the superior constrictor muscles, a rigid plate can be worn without intermission, not only in comfort, but with improved condition of the mucous membrane, which is covered in, and of the general health, the nose being as free for breathing as in a normal condition of the parts, while the plate also enables the wearer to utilize the muscles of the cleft velum. The palate is easily made, and being of hard rubber, does not deteriorate in the mouth. It is not supported by any part of the cleft, and may thus be worn from early childhood without injury to the parts ; in fact, its support may even lessen the cleft.

The plate, which is held up by the teeth against the hard roof of the mouth, extends up into the cleft and thence to the back of the pharynx near the tubercle of the atlas, the end being rounded to allow the sides of the pharanx to close during the act of swallowing. This extension into the cleft being spread out over the soft parts on each side, the ununited muscles draw up against it and close off the nasal cavity. The vowel sounds are therefore preserved from the resonance of the nose by the natural action of the muscles, while the nasal sounds are used when necessary, and the tongue is able to form all the lingual consonants, the stiffness of the hard rubber affording the best possible substitute for the muscular firmness of the natural soft palate. To apply this palate, a simple impression of the hard palate and teeth, as is usually taken for the setting of artificial teeth, is quite sufficient, the extension into the soft palate being made by fitting the gutta-percha pattern to the parts without subjecting the patient to the annoyance of obtaining a plaster impression of these sensitive and mobile organs. This palate is consequently so simple that any accomplished dentist can apply it, and the patient is therefore comparatively independent.

Early use of this artificial palate prevents unnatural action of the tongue, such as attempts to close the cleft with the tongue when the latter should be free to act in articulation, whether in speaking or singing.

Although, as I think has been shown by the foregoing, these obturators are very simple, and are of the least possible inconvenience, still I should not advise placing them in the mouths of children under fifteen years of age. In the first place, a child does not appreciate the great advantage secured by the improved speech, and is thus averse to even the slight inconvenience.

In the second place, the fact that the parts affected are constantly growing, renders the insertion of the obturator a matter attended by considerable risk of interfering with the normal development.

In case of simple cleft of the soft palate, I am inclined from my observations to believe that staphylorrhaphy will accomplish nearly as good results as an obturator, and will, of course, do away with the inconvenience of a plate.—*International.*

THE BRIDGE-WORK FAD.

Dr. S. F. Gilmore, Princetown, Ind.

This is an age of "fads," even in dentistry.

Perhaps the patrons of bridge-workmen are the true sufferers, judging from cases that have come under my observations, both in this country and in Europe in the past few years. In looking for a young man to take charge of my office I found that it was a current belief among those with whom I corresponded or came in contact, that the high standard of their ability should be inferred from the fact that they could make bridge-work. I would consider it much more satisfactory evidence of a man's attainments if he were to assure me that he could "stop toothache." For this is therapeutical, and the "bedrock" of the profession. I do not wish to convey the idea that I am opposed to inserting bridges, for I have made a great many that are doing good service, but let it be understood that this class of work is merely adjunctive, and one of the simplest operations in dentistry.

Let a man ·seek with heart and mind the knowledge necessary to enable him to diagnose. Following the accomplishment of this art, with the ability to apply or prescribe the remedies indicated.

I would classify attainments in the following order :

1st. Therapeutics.

2nd. The selection and insertion of the proper materials for arresting decay in carious teeth.

3rd. The selection and artistic arrangement of a set of artificial teeth.

4th. If he is able to judge of favorable conditions for a bridge—make it.

THE LANCET COMMISSION ON ANÆSTHETICS.

Deaths under Nitrous Oxide.

Nitrous Oxide.—The reports of some thirteen cases of deaths have been recorded, but as an examination of the cases themselves will show, it is very doubtful whether these fatalities can be ascribed to the influence of this anæsthetic. The youngest patient was 10, and the oldest 71. Most deaths have taken place in private practice, and records have come from Canada, France, England, Scotland, and the United States.

The pulse is stated to have failed before respiration in one case, and once simultaneously with it.

In all cases the operation was for the extraction of teeth or stumps, and in three instances the operation had not been commenced at the time of administration.

Intemperance is stated in one case to have been a possible adjuvant cause; in another the patient was dying from cancer; and in a third the case was complicated by vomiting.

The causes of death, as assigned by the reporters, were as follows: asphyxia; fright, the patient not being under the influence of the gas at all; congestion of the lungs, which was noticed two hours after the administration, and eventually proved fatal; the last stage of phthisis; respiratory failure through impaction (1) of a broken gag in larynx, (2) of a molar tooth in larynx; syncope (simple) in three cases, from incomplete anæsthesia and shock of tooth drawing, from tight lacing forcing the heart out of position by the distended stomach.

The measures adopted for resuscitation, as far as recorded, were: artificial respiration, electric stimulation of phrenic by galvanic current, by faradaic current; prone position; stimulation by rubbing, slapping, cold affusions; drawing forward of tongue; tracheotomy.

Post-mortem examinations of persons dying under Nitrous Oxide:

(1) Lungs tubercular—badly diseased.

(2) Heart fatty, atheromatous aorta, thickening of valves, right heart distended, left empty. Lungs engorged. Dark fluid blood between scalp and periosteum. Dura mater adherent, serous effusions into ventricles.

(3) Molar tooth impacted in larynx.

(4) Lungs and kidneys congested, adherent pleuræ, thickening of aortic valve.

(5) Fatty degeneration of heart.

DEATHS UNDER OR AFTER NITROUS OXIDE.

1.—Male, adult. Extraction of teeth. After the extraction of the teeth the patient rapidly sank, and died in two hours. Congestion of lungs. Post-mortem : one lung diseased, other almost consumed by disease. Patient, it was presumed, died because lungs were in last stage of phthisis.

2.—Adult. Extraction of teeth. No particulars given, except that it was stated that the patient was healthy.

3.—Female, aged 17. Dental operation. After inhaling gas, was taken ill, although she did not take sufficient to produce insensibility. Died the following day. Was of strong and robust physical constitution, and apparently in good health before inhaling gas.

4.—Female, adult. Extraction of front tooth (loose). Patient inhaled gas three times in succession, each time taking but a small quantity, being equally fearful of the anæsthetic and of the pain of operation. Finally choosing to submit to operation without gas, teeth were extracted. Immediately fainted, head dropping sideways. Face became livid, then purple. Battery and artificial respiration resorted to, but death took place in 13 minutes, face becoming blanched after death. Nervous shock from dread of pain and fear of fatal effects from inhaling gas. Verdict at inquest, of jury composed of medical men, stated death to be due to asphyxia from inhaling gas; but not enough was inhaled to produce such a result. Post-mortem appearances : Conflicting evidence given—(1) one lung more engorged than other, but healthy. (2) One lung congested. (3) Lungs congested, right lung bound by old pleuritic adhesions. Upper lobes of right lung pneumonic.

5.—Female. Dental operation. Post-mortem : Lungs in a state of asphyxia.

6.—Female, aged 38. Extraction of tooth. Pulse said to have failed first. At beginning of administration patient's pulse rapid and less full. It was determined to operate without gas, but as patient could not bear the pain, gas again given. After operation face became lived and features began to swell. Though efforts were made to restore animation, she breathed only two or three times, and a few moments after her pulse ceased beating. Inhalation of nitrous oxide gas inducing paralysis of respiration, though after the first administration there was rapid pulse with diminished volume, Cause of death said to be impaction of a portion of a broken gag in the larynx. [For controversy on the cause of this death see THE LANCET, vol. I., 1873, pp. 212, 245, 253.] No post-mortem allowed. Believed to be of good health ; of plethoric habit.

7.—Dental operation. No particulars given.

8.—Male. Removal of stumps of teeth for alveolar abscess. Pulse failed first. Operation commenced before complete anæsthesia was obtained, and patient begged several times for more gas, but seems never to have been completely under its influence. After operation, was observed to be very quiet. Cold water dashed over face, and doors and windows thrown open. Face and neck livid, eyes fixed and open, pupils widely dilated. Hands cold and pale, but feet and legs quite warm. Cold affusions ; artificial respiration ; friction revulsions to feet and legs ; galvanic battery—all unavailing. "Death from syncope" (verdict at inquest). Post-mortem : Dark fluid blood between scalp and periosteum ; dura mater very adherent ; membranes full of serious fluid, and veins intensely congested ; ventricles filled with same fluid. Lungs dark—coloured and congested. Heart enlarged, soft and friable ; left side quite empty, right full of dark-fluid blood ; deposit of fat in interventricular furrows ; aorta coated with atheromatous deposit ; aortic and mitral valves thickened. Liver enlarged ; in state of fatty degeneration. Patient was suffering from alveolar abscess caused by carious stumps, and could get no rest at night.

9.—Male aged 10 or 11. Extraction of temporary teeth. Towards close of operation gag slipped, and mouth closed, patient became partly conscious, assuming natural colour, when he took deep inspiration, and immediately showed symptoms of asphyxia. Raising hand to neck he attempted to tear away clothes as though they were loose. Laying patient flat, and slapping across the back were of no avail. Tooth could not be felt. Medical man fetched, who arrived in seven minutes, but patient was then dead. Tracheotomy at once performed, without avail. Post-mortem : Missing lower molar found firmly fixed in larynx with fangs uppermost.

10.—Male, aged 57, Extraction of teeth. Extraction about to be begun, when patient seemed breathless—even lifeless. Tongue was drawn forward, water dashed on face, and artificial respiration begun and carried on for half hour. Syncope. Post-mortem :—Brain : dura mater firmly adherent to calvarium. Heart : visceral pericardium presented few small whitish patches of fibrinous thickening. Valves normal, except soft, miliary, fibrinous vegetation on one of the aortic valves. No fatty degeneration. Lungs : right firmly bound to chest wall ; lower lobe collapsed and atrophied; left large and slightly congested. Kidneys congested. Had a cancerous enlargement of tongue, which at post-mortem was found not to involve larynx. This patient was in a terribly shattered state of health at time of occurrence, the cancer having reduced him almost to a state of collapse.

11.—Male. Dental operation. Nitrous oxide given without legal authority. Syncope was assigned as cause of death. The administrator was tried by eighth Chamber of Paris Tribunal for homicide, in causing the death of the patient, and fined 600 francs, and ordered to pay 3,000 francs damages.

12.—Female aged 71. Extraction of teeth, etc. The pulse and respiration failed together. At the commencement of the inhalation patient's respiration noticed to be insufficient. When patient became unconscious, and teeth had been removed, etc., she suddenly changed colour and became livid, while heart and respiration ceased. Syncope caused by impairment of respiration through tight lacing and over distension of stomach, both acting on a heart diseased and weakened by fear. Patient suffered from fatty degeneration, and was aware of it. She had breakfasted three hours before taking the gas, but digestion was wholly suspended by extreme terror at operation. Addicted to excessive tight lacing.

13.—Male, aged 24. Extraction of tooth. As soon as tooth had been extracted patient gave a gasp and expired. Artificial respiration, with no effect. Syncope, due to incomplete anæsthesia. Heart and lungs examined previous to inhalation, and considered sound. The purity of the nitrous oxide was tested shortly after the accident.

UNTOWARD CASES.

We next pass to the reports of three "untoward" cases recorded as having occurred under the influence of nitrous oxide gas.

1.—Female, adult. Extraction of tooth. After a few inspirations became unconscious; pulse ceased; breathing stopped. Pulling forward tongue; artificial respiration; breathing at length became normal.

2.—Female, adult. Extraction of tooth. Acute and convulsive movement during narcotism, but recovered. Walked 400 yards to station and was in train when seized with faintness, pallor, and active convulsion. Was put to bed unconscious. Next day insensible, pupils widely dilated, pulse irregular and weak, breathing feeble. Was sometimes convulsed. Breath with peculiar fœtor; odour of sulphur alcohol. Was treated as for hysteria; recovery not perfect for several weeks.

3.—Female. Removal of two molar teeth. Dentist who operated. Respiration failed first. Administrant noticed that patient (a little girl) was not breathing. Artificial respiration, which was successful in bringing patient round. At the critical moment administrator was too much occupied in operating to notice sudden stoppage of respiration. He thought that had he been operating unassisted, he would certainly have lost his patient. —*The Lancet.*

EROSION.

By Dr. Perry.

Dr. Perry in a very important paper upon Erosion, read before the New York Odontological Society, and reported in the *International Dental Journal,* says, I believe erosion of the teeth is due to an excess of uric acid in the blood, and the reasons for coming to this conclusion will be best given by the relation of the following personal experience. He then describes his own case—one of well marked lithiasis, associated with passage of a uric acid calculus and erosion of the incisors, and proceeds: Associating the signs of erosion in my incisors with these conditions of excess of uric acid, and noting that as the uric acid manifestations by proper care and treatment lessened or disappeared the erosion stopped, I felt that I had reason to believe that here at last was a more reasonable explanation of this condition than we had yet had. At the very first it seemed a reasonable one, for the gouty condition and the period of erosion rarely occur till advanced adult life, and then I remembered that I had often observed that erosion was most common among those patients who were most indolent and best fed. In fact, I had sometimes thought that it was most common among ladies in high society, whose lives were mostly passed in-doors and subject to the temptations of luxurious living. I have never had the opportunity for the observation of the teeth of many of the working-classes whose lives have been spent mostly in the open air, and who are least likely to be overfed, but in such cases as I have seen I never remember to have noticed a case of pronounced erosion. But, on the other hand, I think with this class accumulations of tartar are rather common. In cases of erosion I feel certain that extensive accumulation of tartar does not occur. It is deposited to some extent, but the acid reaction of the mouth does not favour its accumulation. For many years, before I had suspected what I now consider the cause of erosion, I thought it to be a condition most common to the luxurious classes. In fact, I think by common consent it has come to be regarded as peculiarly a disease of modern high civilization. Commencing to make observations among my patients, I came quite frequently upon cases that seemed to confirm the idea I have expressed. All cases of erosion, however, did not give evidence of the existence of established gout; but since I have commenced to make these observations, I never yet remember to have seen a case where it was not found that there was little care in the selection of food, and where there was not evidence that the life was passed without much thought of those conditions that are necessary to good health. Besides it does not follow, by any means, that the presence of an excess of uric acid indicated a condition of gout, although it may be laying the foundations on which the superstructure of that disease will yet be raised ; or it may manifest itself in disturbed and deranged conditions which are not recognised or considered as gout at all. I think in every instance of marked and advanced cases of erosion there was evidence of the existence of gout. On the other hand, it must be said that one will see positive cases of gout where there are no signs of erosion. Many cases of erosion gave evidence of conditions which had not been suspected to be of a gouty nature, and yet these were unmistakable. The worst case of erosion I ever saw was in the mouth of a gentleman who nearly every summer is sent to Carlsbad, in the language of his physician "To keep down the alarming excess of uric acid in his blood." Another, whose teeth were attacked by most extensive erosion on nearly all their surfaces, was a martyr to gout, and finally died suddenly from complications arising from that disease. I have stated that I believe uric acid in the blood is the cause of these conditions, but, of course, I have no proof of its presence in the mouth, or of its being absolutely the very acid that causes the trouble ; but I feel certain that there is ample proof that that derangement of the liver and kidneys, of which uric acid in the blood is the evidence, is the underlying condition that gives rise to the acid in the mouth, whatever that acid may be. It may not matter, after all, what the acid is, if we are correct in concluding that its origin is to be found in the faulty action of the liver and the kidneys. Once let this point be firmly established, and we will be able to indicate the means of cure. As we all know it is an easy matter with the litmus paper to determine the presence of an acid. It is quite a different and more difficult thing to tell what the acid is. Aside from the observations of cases, it seems to me one of the strongest proofs of the truth of this general proposition is that I have many times been able to arrest this destructive action by correcting the diet and reforming the habits of the patients. This is not easy to do, as it is not often that one will have a patient who may be willing to conform to all the essential conditions. I have already indicated what these conditions are. I am certain that in my own case much good came from the use of the lithia waters. Whether the benefit was derived from the minute proportions of lithia contained in them, or to the washing and dissolving action of the water itself, I am not able to say; but I incline to the latter belief, because I have also for years used the Poland water, which is said to be free from lithia, with as good result, as far as I could see, as that derived from the lithia water. I have also used the Carlsbad and Bedford waters. These two waters give nearly the same analysis, and their action is supposed to be more particularly upon the liver. If Sir Henry Thompson lays down the general proposition that after adult life is reached we eat too much, I think it may be also safely said we drink too little water. Aside from its washing action on the great organs of the body, the liver and kidneys, its influence is felt by the skin, which, in our dry climate and in our furnace-heated houses, becomes dry and hard and incapable of fulfilling its function of helping to eliminate the waste products through the medium of the insensible perspiration. Another important factor in the prevention of this excess of uric acid is the oxygenation of the food-elements. This, of course, is best secured by plenty of exercise in the open air.

FILLING ROOTS WITH GUTTA-PERCHA DISSOLVED IN CHLOROFORM.—Dr. R. I. Blakeman, (New York) says, this solution, depending on the degree of fluidity, is very permeative. Perhaps some of you have experienced getting it on your fingers; if so, you have doubtless noticed how it penetrates the fissures of the skin, and how difficult it is to remove at the time without the aid of a solvent.

If an instrument be dipped into it, especially one that is a little rough, the gutta-percha adheres to it very closely, and remains so after the chloroform has evaporated. It sticks to the smooth surface of glass as well, and also to tooth structure. It sometimes answers nicely to line gold with against which amalgam is to be placed, so that the gold may not be affected by the mercury. When the fluid is very thin, it seems as susceptible to capillary attraction as water. Therefore as some of the canals we wish to fill are very fine, and we feel that they must be filled, as upon this largely depends the future welfare of the tooth, to fill them with this solution seems practical so far as the principles of physics are concerned. For the purpose of describing the process of manipulation, let us consider a molar, the roots of which must be filled from a posterior cavity difficult of access, a somewhat common occurrence. When the roots are dry and ready to fill, it is best to add some fresh chloroform to the solution kept on hand, so that the upper portion is quite thin, while the lower is left very thick. Then with a small broach, with a few fibres of cotton wrapped about the end, the solution can be carried to the canals, and when the entrance to them is flooded over, it can be pumped in with a small bare broach. After the canals are full of the thin solution, by dipping deeper into the supply the thicker gutta-percha is obtained, which can be pumped into the canals in like manner, the chloroform being worked out so that it can be evaporated with the chip-blower. If there should be a doubt as to the fluid having gone to the apex of any canal, it can be pushed farther by making a piston of warm gutta-percha. But great care should be taken in doing this, and the patient should be instructed to respond to the first sensation, for sufficient force may be brought to bear unconsciously to push the fluid through the foramen. When the canals are sufficiently large to permit of it, it is best to put in a gutta-percha point after they are full of the solution, but not so tight as to cause pressure at the end of the root. It might be well to emphasise this point, as any one not accustomed to filling roots in this way is very liable to force something through the apical foramen, which we all know the importance of avoiding in roots that have never had fistulous openings. My personal experience in following out this method is that I am more apt to do too much than not enough, and, after experiencing the results of going too far in some cases, find it easier to stop in time. It will be admitted, I think, that many valuable methods in practice are of additional value because they allow the operator, in case of any trouble, to easily undo his work, and it is on that basis that I claim this method of filling roots to be more advantageous than many others. I experienced the value of this method not very long ago in the following manner. A lower wisdom tooth, buccal cavity, the root-canals of which were very fine, had been filled as above described. For reasons that have no bearing on the subject, it was decided that the filling should be removed from the roots. This was successfully accomplished by using mechanical means to remove all the gutta-percha accessible ; then with a drop-syringe the pulp-chamber was filled with chloroform in order to dissolve the gutta-percha remaining in the roots. This was hastened by stirring it up with a broach. It was necessary to repeat this process only two or three times.—*International Dental Journal.*

THE SIXTH-YEAR-OLD MOLARS.—Dr. Benjamin Lord, of New York, discusses in the *International Dental Journal* the question of removal or retention of the sixth-year-old molars. He says : I believe that the consensus of opinion was that in cases where it is found imperative to remove the sixth-year molars, it should by no means be done until after the full eruption and occlusion of the twelfth-year molars ; this is certainly, in my opinion, a most wise practice, although some would extract much earlier. All seem to have been in favour of extracting antagonizing teeth, and to have held that, whenever it is decided, for any cause, to remove a molar from either the upper or the lower arch, the opposing or occluding tooth should also be removed. I believe, on the other hand, that it is better to lose one tooth than two, and that, as a rule, there will be less loss of grinding surface from the tilting or tipping of the teeth, if the opposing teeth are allowed to remain. I think it preferable, in all cases where the roots can be preserved in a healthy, or even a fairly healthy condition, to do so; as the tipping of the remaining teeth is thereby prevented, and it is the tipping of the teeth which causes more loss of masticating surface than results from the loss of the crown that has broken away. Other evils also follow the removal of the roots, such as the shortening of the arch, and the weakening of the adjoining teeth from the loss of the alveoli.

THE TREATMENT OF PULPLESS TEETH.—To disinfect the roots of any tooth, first remove as much of the pulp as possible, and then induce a *complete* desiccation of the canals by means of hot air. This is no easy matter, but it can be accomplished successfully by means of a foot-blower attached to the hot-air syringe, and a little patience. An hour's continuous blowing of hot air into canals is sufficient. This I generally accomplish in two sittings, allowing the patient about twenty minutes' rest between, and sealing in the cavity, meanwhile, with gutta perha, a piece of cotton slightly moistened with absolute alcohol, I follow this with applications of hydronaphthol dissolved in glycerol, and more hot air, in order to *soak* the desiccated dentine with this antiseptic. The canals I pack with cotton saturated with this same substance, and seal with cement. I have had after-trouble in only two cases within three years, and these were the abscessed teeth that would not take kindly to any treatment, and had to be extracted finally. The advantage of this method is great saving of time and annoyance to patients by repeated appointments, the operation being completed in the same day that it is undertaken. It seems to make no practical difference if only part of the pulp is removed and the canals imperfectly filled. This fact is no doubt due to the replacement of the fluids contained in the dentine previous to desiccation by the antiseptic used.—FRANCIS ESCHAUZIER, Mexico.—*Cosmos*.

BAND-AMALGAM CROWNS.—Reduce crown to within about a line of gum-margin ; the sides to parallel as low as the free margin of the gum will permit. Measure accurately by burnishing a strip of thin sheet-tin around the stump. Measure the distance from the point where you wish the band to stop under the gum to points of cusps of antagonizing teeth with the mouth closed, with a pair of caliper-tweezers (see page 113 Evan's "Crown and Bridge-Work," second edition) for length of band when soldered. Mark the distance between the points of caliper-tweezers, and also the *length* of the measure, on twenty-two carat gold plate. Cut the ends of the gold strip slanting, so that the top may be larger and the bottom smaller than the stump measurement when the band is soldered, that it may have a better shape and drive on tight. Shape the small end to correspond with festoons of gum, bevel and polish. Now bevel the stump freely from near the gum-line, all around ; spring the band over the end of the stump and drive to place, turn the edges, buccal and lingual, in, with How's curved pliers, supporting the opposite side with fingers; see that it does not interfere with occlusion anywhere; if it should interfere, grind off till free, supporting the band to prevent displacement; dry out and fill with amalgam from the bottom of the pulp-chamber to a little beyond the line of occlusion, packing the amalgam thoroughly with a thin instrument between the beveled edges of the stump and the band. Next day shape up grinding-surface with disks and burs, and polish, burnishing the band-edge carefully under the gum.

Advantages.—The band goes on water-tight, and so produces the minimum of irritation; there is never any wearing through; the articulation is perfect; there is no coming off or loosening; it is accurate; you can see every step as you go along. None of which can be said of shell crowns.—J. W. FOREMAN. Asheville, N. C.—*Cosmos.*

ON CLASPS.

By W. G. A. BONWILL.

Firstly. Any one who has any idea of pure mechanics in dentistry must admit that artificial dentures are placed without any method, reflection, or planning,—certainly not as a mechanical or civil engineer would do in advance on paper,—and with no system to reach the greatest strength of plate and artistic appearance. It is astonishing how persons ever get used to sets of teeth where no articulation has been given. True articulation is a sealed book to the majority.

Secondly. Often bands are allowed to go too far up and under the gum border, and not wide enough. They have either too much spring or not enough.

Thirdly. The clasp is allowed to move constantly up and down on the tooth till the tooth is worn materially.

Fourthly. The clasp is soldered to the plate always in one spot —on the anterior or distal surfaces of the tooth, just where most spring of clasp is needed.

Fifthly. The clasp has always been soldered on to the plate by fitting both to the plaster cast and soldering them immediately from that.

Sixthly. This plan of soldering never allows the plate to fit as it should, since the clasp draws the plate away from the tooth, and the tooth is forced out of its place and is never easy.

Seventhly. The value of the clasp is lost in not comprehending the exact relation it should bear to the plate.

Eightly. While the clasp and plate may fit well, it is always a failure if the proper articulation is not in keeping with the apposing teeth. It causes all the strain to come on the clasped teeth, when the plate should rest easily on the gum, and the clasp be firm yet not binding on the tooth.

Ninthly. The clasp made to fit too closely to every part of the surface of the tooth enveloped results in decay, from the fine capillary surfaces made by the too near contact of clasp and tooth.

Tenthly. From the imperfect soldering of plate and clasps the bands have to be made to closely hug the surface ; and from the narrow necks of most teeth capable of being clasped, the plate is pushed too hard up against the gums, and to make the plate remain in the mouth the clasps are required to be stiffer and are never quite comfortable. There is not only wear, but caries is produced from the driving of the gum away from the cervix.—*Items.*

MANUAL TRAINING.

HAND-CULTURE, apart from its value *per se*, is a means toward a more effective brain-culture. The dentist who has spent a short time in the practice of his profession, and gained even no more than average manual dexterity, who cannot accept the truthfulness of this statement, must admit that his experience has taught him nothing. It has become a trite saying that "experience is the best teacher," and in dental teaching, within certain limits, this is put into practice. Thus all the reasoning or didactic teaching in the world will not enable a student to successfully fill a tooth or make an artificial denture till he has seen it done ; or it may be said, even at the risk of making an Irish "bull," that he cannot properly do either till he has first done them imperfectly ; and though it may be urged that the practical part of dentistry is already taught in the clinic room and laboratory, yet, if viewed in the light of their possibilities as educational means, from the standpoint of *the manual training principle*, at the same time bearing in mind, as before stated, that any method of imparting knowledge which involves the exercise of any of the perceptive faculties, is properly included in the manual training idea, it is questionable if these departments have received the attention and elaboration which their real value as educational factors demand. It has been shown that development of the intellect is a natural physiological process presenting two distinct phases—*viz*, the acquisition of basis facts through the perceptive faculties, and the orderly arrangement of and reasoning on the acquired knowledge. The function of the laboratory therefore naturally proceeds that of the lecture room; and for the reason that by far the greatest proportion of the labor of the dental educator is devoted to imparting to the student the knowledge of the facts of dentistry, it seems clear that the laboratory and clinic rooms should be the arenas for his most conscientious and devoted efforts as instructor.

Freely admitting that the judicious selection of the "dental timber" would of itself greatly improve the quality of the finished product, yet, in view of the lack of preliminary examinations of an *efficiently selective character* in our dental schools, the immediate question at issue is, How shall the best result be gotten from the material as presented? Does not the manual training idea offer the most promise as a means for developing a student of average abilities, just as it may be expected to produce the highest result when applied to the best?—*Items.*

Dr. Hugenschmidt recommends in single gingivitis, *without ulcerations*, accompanied by light generalized alveolar periostitis for painting the gum once a day:

Tincture of iodine	5 parts.
Tincture of English aconite (Fleming)...	1 part.
Chlorhydrate of cocaine	$\frac{1}{10}$ part.

When there are buccal ulcerations, besides alveolar periostitis the following mixture will give good results, and the absorption of the medicament is not to be feared:

Tincture of iodine	5 parts.
Tincture of belladonna	
Laudanum of Rousseau	āā 2 parts.

M.—Apply on the gum with a pencil; the application is painful during a few seconds.

In facial neuralgia, a ball of cotton as a kernel and soaked in the following solution:

Menthol	3 parts.
Chloroform	5 parts.

In erruptions of the wisdom tooth, wash the buccal cavity with a solution of sublimate in $\frac{1}{1000}$, scraping off the gum with a knife, to expose all the masticating surface of the tooth ; then wash again with sublimate, and finally dress up with a ball of cotton charged with aristol and placed in the cavity formed by the gingival excisions ; the patient must keep the mouth in an aseptic condition, during several days, and can himself renew several times a day his aristol dressings.—*Revue Internationale d' Odontologie. Quoted by Items of Interest.*

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

AN APPEAL FOR HELP.

To the Editor of the " DENTAL RECORD."

SIR,—We beg to acknowledge with thanks, the receipt, up to the present, of the following subscriptions to the fund being raised for the widow of the late Mr. Minnett.

Any further sums will be thankfully received and acknowledged by

Yours truly,

F. E. CUTTS,
WILLIAM RUSHTON, } 32, Harley Street, W.

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To the Editor of the " DENTAL RECORD."

SIR,—Your May issue contains a report of a paper read by Mr. Whittington before the Students' Society of the London Dental Hospital, on the subject of nitrous oxide. I am so fully in sympathy with the evident desire of the writer to direct the attention of his fellow students to questions that will prove of the deepest interest to many of them in later life, that I feel some little hesitation in drawing attention to one or two points upon which he seems to be misinformed. As, however, similar views seem to obtain elsewhere, I will, with your permission, take this opportunity of correcting them.

Mr. Whittington apparently has never read the pamphlet from which he purports to quote, for the sentence he credits me with does not anywhere appear in the pamphlet entitled "How to Give Gas," which, I suppose is the one to which he refers. The statement that Mr. Woodhouse Braine as a rule uses the left hand in applying the facepiece is also inaccurate, unless that admirable anæsthetist has changed his method in the last few years.

Among the many valuable hints given me by Mr. Woodhouse Braine, the most useful were those with regard to the method of applying and holding the facepiece. The advantage of the method given in my pamphlet is that the anæsthetist has perfect control over his patient, and should the latter struggle when partially anæsthetised, he is best able to prevent displacement of the facepiece. Anyone who has seen Mr. Braine prevent a lusty patient from removing the facepiece during the period of incipient anæsthesia, would have as high opinion as I of the method he adopts in such cases. By holding the facepiece in the manner Mr. Whittington so severely deprecates, the patients' head is held, as it were, in chancery, and should any attempt be made to pull away the facepiece, the anæsthetist has his left hand free to grasp the left wrist of his patient, and by carrying it over to the left side prevent him from raising the left arm. This manœuvre is difficult to describe, but I dare say many old pupils of Mr. Braine will remember it, and also how ineffectual it renders the struggles of the patient.

Mr. Whittington, by inference, states what has elsewhere found a more decided utterance, viz , that I have in my pamphlet given as hard and fast rules many instructions which should only have been suggested. I quote in defence of that method, to which I cheerfully plead guilty, the following sentence, culled from the well-written critique of Dr. Ottolengui's new book which appears in your last issue.

"Dogmatic, too dogmatic, are some of the sentences, no doubt, but this is a small fault, one may almost condone it as a virtue, when one thinks of the cautious generalisations, the inept platitudes, and the cumbrous compilations, which, while safe in their vagueness, and all-embracing in their range, are as little use as far as practical instruction goes."

I am, Sir, Your obedient Servant,

Scarborough, May 1st., 1893. THOS. E. CONSTANT.

To the Editor of "THE DENTAL RECORD."

3, PRINCESS SQUARE, PLYMOUTH, *May 29th*, 1893.

DEAR SIR,—Will you kindly give the enclosed, which is a copy of a letter I have received, a place in your journal. The letter explains itself, and I shall be very happy to do anything I can to forward the views of any English dentist who may be thinking of attending the congress and demonstrating in any way.

I am, yours truly,

F. H. BALKWILL.

THE WORLD'S COLUMBIAN DENTAL CONGRESS.

To be held in Chicago, August 14th to 19th 1893.

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Dr. A. W. Harlan, 70, Dearborn Street, Chicago, Ill.

Philadelphia, Pa., May, 1st 1893.

F. H. BALKWILL, L.D.S.

MY DEAR DR.,—As a member of Committee No. 15, (Prosthetic Dentistry) of the World's Columbian Dental Congress, you will appreciate the importance of our making as good a representation as possible.

The work assigned us is that of arranging for clinical demonstrations of any new or important methods of practice in our department. The Committee has been made up of representative men in different sections of this country and England, in order that our field of labor might be widened as much as possible.

To perform our duty with credit to the Congress and ourselves, will require the active co-operation of each member of the Committee.

As a first step towards this end, your chairman would offer the following suggestions as to the character of the clinics.

1. All demonstrations should be essentially new in character, and not be repetitions of clinics previously given at other Society meetings.

2. Demonstrations should be given, as far as possible, by regular practitioners of dentistry, who have something of practical and scientific interest to present.

3. No demonstrations should be allowed, the apparent or principal object of which is the sale of materials or appliances.

Will you be kind enough to state your opinion in regard to any or all of these suggestions and to offer any others that may occur to you, with a view to improving the character of the demonstrations.

It has been decided that crown and bridge-work, as well as orthodontia are to be included in our branch. For all of these demonstrations, we will want the best men we can obtain—those of originality as well as skill—and your chairman would be pleased to have you suggest the names of any such as you think would be able and willing to serve us in the capacity of clinicians.

After the suggested names have all been received, a list of them will be made out and sent you for approval or disapproval.

The hours, from 9 to 12 each of four days (Tuesday, Wednesday, Thursday and Friday,) will be devoted to clinics, those in operative and prosthetic dentistry being carried forward at the same time in separate rooms.

Ample accommodations in the way of room will be provided for from six to twelve demonstrations in our department each day.

As our time is short please give this matter your immediate and earnest consideration, and let me hear from you at the earliest possible moment.

Very truly yours,

S. H. GUILFORD, *Chairman.*

THE DENTAL RECORD.

VOL. XIII. AUGUST 1st, 1893. No. 8.

Original Communications.

SERIOUS EFFECT OF NITROUS OXIDE ON THE KIDNEY.

A Synopsis of 50 Cases, by J. SIM WALLACE, B.Sc., M.D., C.M.

DESIRING to find the cause of the after-effects which are occasionally complained of from the administration of Nitrous Oxide Gas, I resolved to make a clinical report of a number of cases and naturally among other things included an examination of the urine.

In each of fifty cases on which special notes were written, I examined the urine before administering the nitrous oxide, and made a few notes as to the general health, pulse, etc. I then proceded with the administration of the gas in the ordinary way. The patient, in each case, having a tooth or teeth extracted. When the patient recovered from the operation and the anæsthesia, I made a full report of the case and examined the urine again. A further examination of the urine was made when the patient returned on the following day, and at other intervals.

A synopsis of the results derived from these examinations is as follows:—

In about half the cases there was no appreciable change in the urine taken before the anæsthesia, and that taken after.

The post-anæsthetic urine was often of a deeper colour than that which was taken before the anæsthesia, and sometimes deposited urates on standing when the pre-anæsthetic urine did not. Probably this was simply due to concentration, the urine being excreted in the one instance shortly after the imbibition of fluid in the other after a longer interval..

In fifteen of the cases the urine taken after the anæsthesia showed a turbidity, decidedly greater than that taken before the anæsthesia. I examined the turbid urine in some of these cases microscopically, and found numerous cells of various kinds, chiefly small round cells and large nucleated granular principally squamous cells. Of course in the sample which contained blood (to be more fully mentioned below), the blood corpuscles were also observed though not in great number.

In seven cases phosphates were indicated in quantity (by being precipitated on boiling, but dissolved on the addition of a drop of acetic acid) in the urine taken before the administration of the gas, whereas phosphates were not so indicated after the anæsthesia. In one case phosphates were thus indicated both before and after the administration.

In nine cases the urine which contains no albumen before the anæsthetic was given, contained albumen after the anæsthesia. In two cases the albumen showed itself even after a week's time. In one case it was diminished in amount after twenty-four hours. In the remaining cases, after a day it had disappeared from the urine, three cases were only examined once after the anæsthesia.

In one of the cases in which albumen continued to show itself for a week, the patient was addicted to eating highly nitrogenous food and mentioned that he seldom ate bread.

As the following case is interesting I shall give a few notes of his case.

W. K., aet. 32. Glass-maker in good health. Had taken food about one and a half hours before the anæsthetic was administered. Took gas, sat during the operation and recovered consciousness quietly. After regaining consciousness felt in a particularly happy frame of mind. Stertor was just brought on, he become slightly livid ; and the conjunctional reflex was almost abolished.

The pupil, before the anæsthesia, was decidedly contracted, on begining to loose consciousness it dilated very considerably, towards the end of the anæsthesia it again contracted but not to the degree at which it was at the commencement of the anæsthesia.

The urine immediately before and fifteen minutes after the operation was free from albumen. So far this case may be considered normal. The following note however taken seven days after the operation shows a remarkable development of the case.

W. K. had headache the day following the anæsthesia, which increased in severity for the next twenty-four hours, when it was very severe. (Headache following nitrous oxide anæsthesia is not uncommon, but I have failed to learn from the literature on the subject what the cause of the headache may be. In this case it was possibly associated with some kidney trouble). He also complained of pain in the middle of the lumbar region, it being of a peculiar darting character, it came on twenty-four hours after the anæsthesia and increased in severity till the following day when it was most severe and on one occasion made him fall. He had never had an attack of this kind before. He mentioned that his urine on the third and fourth day after the anæsthesia had been almost as clear as water but that since it had returned to its usual colour. (It may be remarked that on the two days mentioned it was decidedly colder than the days preceeding and succeeding them).

The urine on being tested was deep in colour, acid, and showed a trace of albumen.

In the following case although the urine was normal before the anæsthesia, besides a trace of albumen blood was also detected. It was present however in very small quantity, and on the day following the albumen and the blood were both absent.

This case is rather interesting, so I shall give a few extracts from the report on the case.

J. B., a delicate looking lad of 16 years. Two teeth were extracted. During the extraction of the second there was muscular rigidity and opisthotonos. The pulse on beginning the inhalations soon became only indistinctly perceptible, but on continuing it became more distinct. On discontinuing the anæsthetic it became very weak again and remained in an unsatisfactory state for some time. Just after the anæsthesia he felt sick, and was so, more or less for the next twenty minutes. He vomited a little blood which had apparently been swallowed. The treatment he got was the recumbent posture and ammonia to inhale.

The point however of special importance in connection with case, over and above the fact of his having albumen and blood in the urine is that he complained of a severe pain in the left lumbar region. The pain was described as sharp, and lasted about one or two minutes, and did not return.

The fact, that both the cases in which pain in the lumbar region of this suspicious character was complained of, were associated with albumen and changes in the urine points rather directly to an unsatisfactory action on the kidney. That nitrous oxide has a distinct and probably serious action on this organ is I think obvious, It is remarkable that most books on the subject of nitrous oxide anæsthesia do not refer to the kidney; and after effects when discussed at all are not spoken of in connection with its action on that organ.

The cause of the action on the kidney is not very obvious, at first I thought that it might be due to a sudden transitory dilatation of the renal arteries, but that would not account for the continuance of the albumen in the urine. Besides it is stated that the blood-vessels in the splanchnic area contract while the blood-vessels of the surface of the body dilate, the sphygmographic pulse tracings showing a lowering of blood-pressure.

The administration of nitrous oxide sometimes causes perspiration apparently unaccountable by the slight transitory dilatation of the vessels of the surface. It seems as if the nitrous oxide may have a direct action on the sudatory glands independent of its indirect action through the circulation.

Possibly it has also a corresponding action on the kidney, both organs being probably engaged in the elimination of the nitrous oxide. This is however theory. The gravity of the facts I have recorded appeals to anæsthetists without my dilating upon them. I trust further investigation may give these results a more definite significance.

AN ADDRESS

By the Right Hon. Sir John Lubbock, Bart., M.P., F.R.S., to the Students of Guy's Hospital.

It is now my pleasant duty to congratulate those who have received the prizes which have just been distributed.

It is usual on these occasions to offer a few words of encouragement and advice, such as the experience of the world enables us to give to those just entering on life. You have shown, by the prizes you have secured, that you possess abilities above the average, on this I congratulate you. It is also, however, a responsibility like all other privileges. I hope also that those who have not carried off prizes will not be discouraged. We are told that Wellington and Napoleon were both dull boys, and the same has been said of Clive, Walter Scott, Sheridan, Burns, and many other clever men. If, indeed, you have not done your best, that is another matter: but if you have done your best, you have only to persevere, and many of those who have never been able to distinguish themselves at school, have been very successful in after life.

As a mere question of success in your profession, though I should be sorry that you should look at life from any such low point of view, character and steadiness will do more than cleverness. It is more important to do right than to know it, and, whether you wish to be happy or to be good, you should follow the same course. Try to make every one that you meet glad that he has done so. Never lose a chance of giving pleasure. Remember it takes two to make a quarrel, and do not you be one of them. There is an old tradition, that a cup of gold is to be found wherever a rainbow touches the earth, and there are some people who smile, the sound of whose voice, whose very presence, like a ray of sunshine, seems to turn anything that they touch into gold. A merry heart we know is a continual feast. As our great poet and philosopher, Shakespeare, has well said:

> "All places that the eye of Heaven visits
> Are to the wise man ports and happy havens."

Of course you cannot expect to go through life without storms and troubles, doubts and anxieties. Descartes described himself as *res cogitans*, *id est dubitans*, *affirmans*, *negans*, *pauca intelligens*, *multa ignorans*, *volens*, *nolens*, *imaginans etiam and sentiens*. Mystery, indeed, surrounds us on all sides, and we must not be impatient if the veil seems to lift but slowly. But yet the troubles which come to us are few in comparison with those we bring on ourselves. Dr. Richards has told us that the passions—anger, hatred, grief, and fear, are among the influences most destructive of vitality, and among the darkest shadows of life are those which a man makes when he stands in his own light. If you sometimes feel out of heart remember that we live in a world in which we cannot afford to be discouraged by trifles. But after all, the Prophets of Evil have been much less often right than the Prophets of Hope. We must not be unreasonable in our expectations. "Fortune," said Boyle, "can give much, but the mind alone can make that much enough."

As to the importance of wealth the case is not so clear. I have no desire to undervalue money, but the feverish pursuit of it, which in all great cities is a source of danger, is certainly not conducive to health or happiness. Wordsworth and his sister for many years lived on thirty shillings per week ; they lived in a cottage, a real cottage, with a single sitting room, where he was liable to constant interruptions from servants, visitors, and children ; yet, under these circumstances, much of his finest poetry was written. I am not prepared to deny that an income, which increases somewhat as the years advance, is not an advantage. Time is said to be money. and even more important than money is time. But if one great advantage of money is to give leisure, it is no use giving too much leisure and time to make money. Other things are even more valuable than silver or gold, and yet many will take a great deal of trouble for silver shillings, who will hardly stoop to pick up golden thoughts. As regards the material necessities of life, your education raises you above any reasonable anxiety.

Sir James Paget, in one of his interesting addresses, gives statistics as regards his own pupils, whose careers he had followed. Out of 1,000, 200 left the profession, came into fortunes, or died early. Of the remaining 800, 600 attained fair, some of them considerable success. Out of the whole number only 56 entirely failed. Of these, 15 never passed the examinations, 10 broke down through intemperance or dissipation, and out of the whole 1,000 only 25 failed through causes apparently beyond their own control. In fact, in medicine as in other walks of life, or perhaps even more so, if you make yourself useful, you will be used. Of course you you will have doubts and difficulties, but intellectual life lifts us to regions of thought above all mere personal anxieties, and study is so entrancing that to many men, and especially to the highest natures, exercise becomes a difficult duty. Ascham gives us a charming account of his last visit to his noble pupil, Lady Jane Grey. Her father and mother were hunting in the park, and he found her in an oriel window reading the Phaedo of Plato. He expressed some surprise, but she told him, " I wist all their pleasure in the park is but a shadow to that I find in Plato." But yet the temptation to neglect exercise is one which must be resisted. If you wish to be well according to Abernethy, you must live on sixpence a day and earn it, and there is a well-known proverb, that "there is nothing so good for the inside of a man as the outside of a horse." But you will not have to deal with mere bodily ailments. Bodily suffering often comes from troubles of the mind and of the heart, and you will be called on, not infrequently, to minister to a mind diseased. In the noble profession which you are entering, it will be your privilige to soften suffering, to relieve pain, to restore health, and even when that is impossible, you will at least do much to soften the hand of death. But your profession has even more than that in store for you. You will find that in many cases it is the mind rather than the body with which you have to deal. Such cases require good advice, kindness and sympathy more than medicine. You will gradually become not merely the medical attendant, but the confidential friend. To fit yourselves for an office so high and noble, is no light or easy matter; mere knowledge, however profound, is not sufficient; tact, sympathy, and above all, character are also necessary. The medical profession is a learned profession; but it is more than that. Medical men have always stood high, not merely in knowledge, but in character, and never more so than at the present time, and you may rest assured, that, if you do your best, you will have the happiness of feeling, when old age comes, that you have led useful lives, and have brought comfort and consolation into many a home; that you have not only relieved the ailments of the body, but the still keener sufferings of the mind, have enabled many, if not to realise, at any rate somewhat more to appreciate, the inestimable gift of life, and the interest and beauty of the world in which we live.

*SUMMARY OF AN ADDRESS

By Sir William Flower, F.R.S.

Sir William Flower said that it was with extreme regret that he felt himself obliged to come before them without any specially prepared address, such as he would liked to have given, owing to his having been so closely occupied since his friend, Mr. Morton Smale, had asked him to undertake the duty. Though he pleaded hard to be excused when Mr. Smale wrote him a month ago, feeling that he had no time to do justice to the occasion, he nevertheless

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* Delivered at the Prize Distribution of the Dental Hospital of London.

yielded to importunity, and the more so because he was so much interested in, and indebted to the dental profession. His knowledge of the dental profession went back now more than forty years. He entered the medical profession in 1849, and of course very soon became acquainted with members of the dental profession. He had a good opportunity of seeing what the profession then was, and the contrast between now and then was more marked than in any other profession or calling of the kind. Then dentists had no recognised position or organization of any kind. Since that time they had acquired a legally established and protected professional status ; they had become associated with the various colleges of surgeons in the different divisions of the kingdom, under whose auspices strict examinations had been instituted, and an educational curriculum was required, without passing which no one could enter their ranks. For obtaining these advantages they owed much to the exertions of one of his oldest and most intimate friends, Sir John Tomes. They had now that valuable institution, both for the benefit of the suffering poor and for the instruction of the student, the Dental Hospital, which he hoped would soon enter upon a fresh sphere of usefulness when the enlarged accommodation afforded by the new building, that was in contemplation, was obtained. They had an admirably organized school, with a complete system of instruction both theoretical and practical. They had also the Odontological Society, with its library, museum, and meetings for the interchange of ideas, and discussion of subjects pertaining to the advance of their profession, and its journals for the dissemination of knowledge among its members. In addition to these there were a great many other improvements that had taken place. He should like to refer to the enormous improvements in the *practice* of dental surgery, and the immense amount of relief to suffering that had resulted. The suffering produced by the defective condition of the dental organs they all knew was one that afflicted every member of society. One could always think with a great deal of interest of that line of Shakespeare "There never was philosopher yet that could endure the toothache patiently." He thought that line must be rather comforting to many who suffered from toothache, for if no great philosopher could put up with it, then ordinary mortals might be excused if they could not tolerate it. Bad as the toothache was in olden times, he was sorry to say that the troubles of the teeth were worse now, for with the advance of civilization the condition of the teeth did not improve, indeed, he almost thought that the time would come when no one would have any other teeth than the artificial ones provided by the dentist. But happily the knowledge of proper treatment and cure was growing up, and growing even faster than the disease. He remembered very well what dentistry was fifty years ago, when he had to practice it himself. Having finished his medical education he became an army surgeon, and, like most medical students, up to that time he had neglected the dental side of the subject, and he should like to tell them that instead of the imposing array of the forceps—not merely one for every tooth, but several patterns for each tooth—such as they had now, at the time he was speaking of the tools were very rude and inefficient. The only instrument he ever pulled out a tooth with was a key, and a very wonderful instrument it was, for it not only pulled out the tooth you wanted to extract, but if you were not very careful it would pull out more than one, and possibly break the jaw. With that, and a pair of stump forceps, was all he had to practice on the soldiers with. Since that time the improvements had been very great, but as his hearers were even better informed than he was upon that subject, he would not dilate further upon it.

Before sitting down he would just like to say one word as to the scientific study of subjects connected with the teeth, a side which had been advanced by certain members of the dental profession, notably Sir John Tomes and his distinguished son, Mr. Charles Tomes, but he thought a great deal had been done by those outside the dental profession. At the time that he spoke of the whole of the knowledge of this subject was contained in that most valuable work "The Odontography" of the late Sir Richard Owen then recently published. The labours that led up to that work marked a great epoch in the scientific study of the teeth, and for a very long time after very little further was done, but in recent times a great deal has been done more particularly on the Continent and in America in two or three lines, which greatly extended and almost revolutionized their knowledge in some directions. One line, the comparative anatomy of extinct animals, was quite unknown previously. One thing they would find from the study of extinct animals, viz :—that their dental organs were much better preserved than now. They had attracted a good deal of attention, and a great deal of work had been done by Cope and others in America it tracing out the gradual modifications of tooth-form from one species to another—from the most simple to the complex it was a most interesting and most fruitful study and their investigations had illustrated the great laws of evolution, the greatly regretted that our own countrymen had aided little in this branch of study and that observations on these points mostly came to us from abroad from Sweden and America. Then in addition to that line there was another one which they owed to the perfection of our microscopes and the great improvements there were in the methods of histological research. Another most important field of research was in connection with the early development of the teeth. A great deal that was not suspected before had come out in the last few years, animals that were only thought to have one set were now found to have two, and in this direction a flood of light had been thrown which had been a great help in the extension of biological knowledge. Now these were subjects which he though ought to be more taken up, and he wished they were more taken up by many of them. He especially addressed himself to his younger hearers, who he thought could so well fill the interval which must elapse till their days were filled up with the actual practise of their profession, it seemed to him that they could not do better than devote a great deal of their attention to the scientific subjects of their vocation. He felt sure that they might do so without in the least prejudicing their practical work, on the contrary nothing would tend so much to improve their powers of observation for daily details of ordinary life, and they would rise in general estimation as they became a learned and scientific as well as a practical profession.

School Gatherings.

GUY'S HOSPITAL.

On the 17th ult. a double event was celebrated at Guy's—the distribution of prizes, and the opening of the new buildings by Sir John Lubbock.

The proceedings commenced with a luncheon, at which Mr. H. Hucks Gibbs presided, having on his immediate right Sir John Lubbock, and being supported by Sir John Tomes, Sir Edwin Saunders, Dr. Pavy, Sir Joseph Fayrer, Professor Odling, Professor Michael Foster, Dr. Wilks, Mr. E. H. Lushington, Right Hon. Lord Cottesloe, Sir George Buchanan, Sir Henry Acland, Hon. Sir C. Fremantle, Mr. T. Bryant, Mr. J. Smith-Turner, Mr. Morton Smale, Mr. C. S. Tomes, and many other distinguished representatives of science and medicine; the company numbering about 120.

The CHAIRMAN said:—I shall endeavour to be short, and I hope I shall not be obscure. Everything that tends to the advancement of science, especially that branch of science which tends to the curing of men's ailments, must be interesting. I am glad, therefore, to be enabled to be present to-day, and also that we have had the good fortune to induce Sir John Lubbock to perform the important part of opening the new buildings. I was told that he had the gout and probably might not be able to come; but he is with us, and I think there is no place to which he could more appropriately come under the circumstances than to Guy's Hospital. Sir John Lubbock has done so much for science during his lifetime, and done so much to make science popular and delightful to the lay mind. Certainly we shall not find that dentistry was helpful to the primitive conditions of man; we shall not find that it is now well-known to uncivilized races; still less shall we find that it is one of the "pleasures of life"; but, I am quite sure, my good friend here will be able to extract very much that is interesting to us, and, I am sure, there will be no man present who will be desirous of stopping him.

SIR JOHN LUBBOCK.—You have conferred a great privilege on me in inviting me to open your new Laboratories. There are many, I am very conscious, more worthy of the honour, more capable of doing justice to the occasion than I am. There is, however, of course one special ground for the selection you have made, and that is the fact of my representing the University of London in Parliament. It might be stated with accuracy that Guy's forms no integrel part of the University; but the ties between the Hospital and the University, though not legal or technical, are not the less close and intimate. We have common objects, common duties, and common interests; and, close as the connection is, I may perhaps be allowed to express the hope that in the future it may be closer still and more complete. Even at present I have the honour of representing a large and increasing number of Guy's men. It is natural, also, that in your Dental School I should feel a special interest, having had the privilege, on behalf of the profession, of carrying the Dental Bill through the House of Commons. Guy's is one of the great Institutions of which London is justly proud, and it happily combines with the venerability of age the growth and vigour of youth. Your numbers, I see, alike of patients and of students. continue to increase, and last year were larger than ever, a fact all the more satisfactory when we remember that a fifth year has just been added to the course of study. The new laboratories are not only fitted up with all modern requirements, but will afford the necessary space for some years to come. You have—the first of our great hospitals—established a complete Dental School, and I may say with confidence, both of the laboratories and of the school not as my own opinion, which would be worth very little, but as that of one of our great authorities, that they are "worthy of Guy's," and he justly added, "I cannot say more." The marvellous progress of discovery has been the glory of the last half-century, and medicine has certainly not been behind her sister sciences. We may also, I think, fairly claim that Britain has contributed a fair and full share of the discoveries which have been made. When we remember the great names of Hunter and Jenner, Simpson and Lister, and when, here at Guy's, I look round and see Dr. Wilks, Dr. Pavy, Dr. Pye-Smith and Mr. Durham, but, indeed, I might mention the whole staff, I feel not only that this country has borne its part in what has been done, but that in the progress of medical science Guy's stands second to no institution in the world. Sir George Humphrey only last year, pointed out that when we began life, anæsthetics and antiseptics had not been dreamt of, there were no excisions of joints, no abdominal operations. They were, comparatively, barbarous times, without temperature thermometers, without stethoscopes, aspirators, iodide of potassium, salicylic acid, or even cod liver oil. The treatment of wounds was something horrible. During that period the knowledge of the localisation of the brain function has become more extended, more precise, and has resulted in those great achievements of brain surgery which have already proved so successful. Yet I am sure you will agree with me when I say that science is still in its infancy. What we have as yet discovered is but an infinitesimal fraction of the revelations which still await us. The known bears no appreciable proportion to the unknown. A great statesman—now, unfortunately, lost to us—the Chancellor of our University, Lord Derby, once, when speaking of the great discoveries of the past fifty years, said that we could not hope for such great or such brilliant progress in the next half century. I should rather hope that the reverse is the case, that great and brilliant as has been the progress of the present century, that of the next will be grander still, and I base my belief on three grounds—first, because, while knowledge is finite, science is infinite as the light of discovery pierces the gloom of ignorance and the circle of light expands around us, the field of exploration widens more and more; secondly, because the application of new processes and inventions—the photograph, the microtome, the spectroscope, and many more—add skill to the hand, increase the power of the eye, and almost endow us with new senses; while the numbers of scientific workers is much greater, though, indeed, we may still say that the harvest is plenteous but the labourers are few. There seems, indeed, to be many who think that we have reached the limits of human knowledge, and that the study of medicine is a mere matter of book learning and practical application. I need hardly say that I do not wish to undervalue what can be learnt from books. Such knowledge is most valuable, but there is much which no book can teach us. The Greeks tried to settle many questions by verbal arguments which can in reality be determined by observation only. There is an essay in Plutarch's works on the question, "Which was first, the bird or the egg?" and one reason given for deciding that the hen preceded the egg is that everybody calls it "a hen's egg," and no one speaks of "an egg's hen." We are not, ourselves, by any means free from the same error, but it is an error. Without taking too sanguine a view, I think we may reasonably and confidently hope that in these laboratories which we have opened to-day, new steps will be taken in the triumphal progress of science, which will confer fresh lustre, not only on this great and ancient institution, but on the country to which we belong, and which will contribute to the advance and welfare of mankind.

The CHAIRMAN.—On visiting the new buildings just now we were shown what seemed to be a ghastly sight—a room filled with fifty dentistry chairs, but I am told that same room is called the room of consolation. Then we were shown some beautiful instruments, on which I at first felt I could not express an opinion, but on reflection I thought the President of Guy's, "ex-officio," ought to know all about it, therefore I pronounced them good. I was also introduced to certain bacteria, and considered them out of place until it occurred to me there was some connection between what was dental and what was incidental. I shall, however, ask certain of our distinguished visitors who went round with me, and who are better qualified than myself to judge of these things, to give you their impression of what they saw.

Professor Odling.—Among the number of distinguished visitors assembled around this table I cannot but recognise that I am selected to make acknowledgement of this proposal on the ground of my association, a great many years ago, of one of those branches of study here, the inauguration of the improved material means for teaching which, has been the occasion of our coming together to-day. I confess for myself that, although the interest which unfortunately all of us must feel in dentistry is very great, my own special interest is with that other department which is devoted to practical chemistry. Happily my interest hitherto in dentistry has been very moderate in degree. I presume it is an interest that will grow from year to year, while practical chemistry I remember in respect of the past. I may venture to remind you that, prior to 1851, practical chemistry was not included in the subjects for instruction in the medical schools attached to the great London Hospitals. At that time the goal of the great majority of students was to get through the College and the Hall. The College did not make any recognition of chemistry. The Hall did not examine in practical chemistry; it did not require of its licentiates that they should have undergone a course of instruction in practical chemistry, but it did require that they should bring up a certificate of having done so, a sort of homage that vice pays to virtue. One might say that the bringing up of the certificate was the predominating consideration; the passing through the instruction was a minor consideration, if a consideration at all. In those days the students of Guy's Hospital had to get their instruction in practical chemistry elsewhere. I and some of my fellow-students got it in the College at Oxford Street, under Hofmann; but in 1850-51, the Society of Apothecaries determined they would not accept the certificate except in association with the thing certified, and the result was that practical chemistry was instituted as a subject of study here and at the other medical schools. I had the honour of being appointed the first teacher of that subject, and the dissecting room (and a very excellent one it was, especially having regard to the general condition of dissecting rooms at that time), was in the opinion of some of the staff desecrated by being turned into a chemical laboratory. The laboratory was opened three days a week, and placed under the supervision of certain of the staff. On his own day, the Senior Lecturer in Chemistry, Mr. Aitken, was scrupulously regular in his attendance. I do not think he came so much to supervise me as to indulge in the entirely novel delight of seeing sixty to eighty students at work with the test-tube and blow-pipe. My other two supervisors paid me the compliment of not making an appearance on any single occasion. However, at the termination of the Summer Session, my pupils, who were also my fellow-students, made me a very warm and kindly recognition of their satisfaction and goodwill, and, although I have since received more costly presents, none ever gave me more pleasure. As a result, I was formally appointed to the teaching of Practical Chemistry in this school, and the prospectus for the first time included practical chemistry as one of the subjects taught. For a period of fourteen years I filled this office, when fate and prospects of improvement lured me elsewhere. Then, also, I received a kindly and more substantial recognition of the goodwill in which I was held. Among my fellows of the first year of my term was Dr. Burton-Brown, still held up as the greatest of all London University prize winners, and who afterwards had a magnificent career in the Medical College at Lahore. In my second year I had the now Senior-Surgeon of the Hospital, Mr. Durham, and in the third and fourth year I had Dr. Pye-Smith. Well, one cannot help on an occasion like this, looking back and making a comparison of the beautifully-furnished laboratory which now exists with the rough appliances in use at that time, and recognising that the position chemistry now holds as one of the subjects of medical education, compared with the position it held then, is somewhat comparable with the laboratories of to-day with those which existed then. At that time there had been no Dr. Woolridge to excite interest in the chemistry of the blood. Chemistry was not popular: neglected not only by the idle few, but by the industrious many, who neglected hardly anything else. It was not recognised that the basis of progress in scientific medicine is physiology, and as to physiology, one half of it is based upon chemistry. Speaking as an old student, I cannot but congratulate this school upon the acquirement of facilities which will contribute so much to the progress of that practical art in which they are all so much concerned. I have only, on behalf of the visitors, to say that as we are all interested in dentistry, so are we all interested in the progress of that art of medicine on which, at some time or other, all our lives are dependent, and we can only wish that the material additions to the buildings will result in an advancement of medical science and art that will be of service to whole generations.

Sir Edwin Saunders.—I am instructed to return thanks for the visitors on behalf of my old friend and colleague, Sir John Tomes, and for the visitors and myself I beg you to accept our sincere thanks for having invited us on this occasion to assist in the very interesting function which has taken place. What we have witnessed to-day marks a new era in the history of the management of our large hospitals. A new department has been received and incorporated into the medical body. I think it is equally a matter of congratulation to find the old institution under whose hospitable roof we are assembled, showing that those who control its affairs are determined to keep abreast of the times, and to omit nothing that will contribute to the relief of suffering and the promotion of health, and also as regards this, the youngest branch ; for we all remember that while many of the large hospitals had departments for the treatment of the eye and ear, there was none which had satisfactory school arrangements for the relief of those suffering from dental troubles. In fact, the care of the teeth would seem to be the last thing demanded by a high civilization. We can all recall the time when the disgracefully neglected conditions of these organs was conspicuous among persons who otherwise made considerable pretensions to refinement. Lord Playfair, a few years since, in an address on human progress, asked a question, which has often been asked, and must be variously answered : What is the best (because unvarying) test of high civilization ? and he said in answer, that he considered the people that made most use of soap had the highest claims to be considered civilized. Well, I would say in addition, *those who use the tooth-brush*, and I congratulate the gentlemen now entering the profession upon the improved conditions in this respect, under which their operations will be performed. I can remember the time, now so long ago, when I came down to Guy's Hospital as the only place where I could learn anything connected with the department to which I was to devote myself, and I was then introduced to that charming gentlemen, Professor Bell. I am almost tempted to state another thing which occurred to me as I came down to-day : that my original wish was to become an engineer, but this was too costly, and too long in bringing in a return, and it was necessary for me to resign that idea, but in the meantime I had such a longing for everything connected with machinery, that I had acquired quite a museum of mechanical contrivances, and this being known to a gentlemen of my acquaintance, he begged me to bring my little models down and have an evening at the Birkbeck Institution. Mr. Frederick Tyrrell, one of the surgeons at St. Thomas's Hopital, coming home from delivering his lecture, happened to call in there, and afterwards sent his card in to me. He said, "Why should you not come to St. Thomas's and lecture upon the subjects you are going to devote yourself to?" That was the origin of my first acquaintance with that institution. Pardon an old man's garrulity, but I cannot help remarking how in coming back to this scene of old associations, one's memories resolve themselves into palpitating actuality. I can therefore appreciate to the full the advances that have been made. Everything seems to have been done that could reasonably be asked for, and always done with regard to efficiency. The result is equally honourable to the enterprise and liberality of the executive, and to the skill and foresight of Mr. Pedley and his coadjutors. I shall trust that what has been done will be found mutually advantageous to this grand old institution, and to the new branch of surgery which is now rising to more and more importance, and we wish to the Dental Department of Guy's a long and prosperous career.

The Distribution of Prizes.

The luncheon guests then adjourned to the Pavilion, where a large company of students and their friends had meanwhile assembled to witness the distribution of prizes, and to hear Sir John Lubbock's address to the students. (See page 340.)

The Treasurer briefly introduced Sir John, the awards of the year were distributed, the following being a list of the dental awards :—First year, Messrs. H. Wallis, £10, Urban E. Cave, Certificate, and W. H. Pilcher, Certificate. Second year, Messrs. J. B. Parfit, £15, F. C. Bromley, Certificate, and Ed. Clayton, Certificate.

The Treasurer.—I am going to ask you to join with me in a cordial vote of thanks to Sir John Lubbock for coming here to-day, and for all the excellent words of advice and assistance which he has given to students of this institution. This is a great day for Guy's, but I feel that it has not been brought about without great efforts on the part of the Medical Staff. Within the last few years the interest the Staff has taken in the progress of the students has been very manifest. We have not only completed the new buildings in front of us, but behind us is the College, and, thirdly, we have purchased a piece of land at Honor Oak, where the students will have the opportunity of carrying out all those pursuits so strongly recommended by Sir John Lubbock. I will simply, Sir, conclude by applying your own words, and say that, having once seen you, I hope you will be good enough to come again.

Dr. PYE-SMITH.—I have been asked to second the motion of the Treasurer, and I take it to be the duty of the Staff to second his efforts, and I congratulate you, Sir, and ourselves upon the large and important assembly which we have here to-day. It is, we feel, at once a pleasure and an honour to have you, Sir John Lubbock, present, and to be surrounded by men eminent and revered. It is, personally, a great pleasure to see my old friend and master, Professor Odling, Dr. Clifford Allbutt, Professor Michael Foster, whose face is well known to many of you, and those other friends who gather round us on a festive occasion like this, but especially we are favoured by the presence of the Chairman, Sir John Lubbock. I am sure you will appreciate the fact that he has come, notwithstanding suffering, that he has given us an example of one of the beauties of nature, and perhaps the best of all, the beauty of good nature, and we thoroughly appreciate his kindness. If I may venture to give this distinguished sufferer consolation, I would remind him that Sydenham consoled himself with the belief that it is not fools or poor or vicious men, who are thus tormented, but philosophers and men of worth, and he might have added University Members of Parliament. This malady also attacks men in the prime of life, and when Sir John Lubbock begins to verge towards later years, he will find the enemy loses his terrors, and become half a friend; and to the students I would say, whatever your course in life may be hereafter, I am sure you will remember with pleasure this occasion, and it may be that when suffering yourselves you are called upon to attend to others, you will be helped to do your duty by the example that Sir John has given you to-day.

Mr. DURHAM.—I cordially support this motion. Sir John Lubbock is a man whom it is an honour to know, or to associate with in any way. Had my friend, Dr. Pye-Smith not referred to it, I should not have ventured to touch upon the malady from which our distinguished visitor is suffering, but, as he has done so, I can only express my regret that the case is not of such a nature as to require surgical interference. Sir John Lubbock is distinguished not only so much but in so many ways. He is equally at home in dealing with the habits of wasps and ants, and watching the movements of Irish Members. He is equally familiar with prehistoric man, and as making his mark in the history of his own times ; and those students who have received prizes from his hands will remember with pleasure the occasion.

The vote having been carried with acclamation,

Sir John Lubbock, in acknowledging the same said :—I am very much obliged to the Treasurer and his two friends for what they were good enough to say just now. Dr. Pye-Smith and Mr. Durham have referred in kindly terms to my slight ailment. I must confess that I am glad it is not one that requires any serious surgical treatment. Dr. Pye-Smith held out to me considerable hopes, and I was feeling quite happy, until I heard him say that when I got older the gout and I would be better friends. This is not at all to my taste, and I should like to say with the poet, "I do desire that we be better strangers," but I have no doubt it was excellently meant by my friend, and in that way I take it. Really, though, ladies and gentlemen, it has been a great interest and pleasure to me to be here to-day, for we all know in London that Guy's is one of those great institutions of which all Londoners are so justly proud.

EDINBURGH DENTAL HOSPITAL AND SCHOOL.

The Half-yearly Meeting of the subscribers to the Edinburgh, Dental Hospital and School was held yesterday in the School premises in Lauriston Lane. Dr. Littlejohn in the chair. Mr. W. Bowman Macleod, L.D.S., read the report, which stated that the Session which they were now bringing to a close had been one of unmingled satisfaction. The number of students entering upon their studies at November, 1892, and May, 1893, had exceeded that of any previous session, the number on the working roll being at present thirty-two. Year by year more attention was being given to the development of manipulative skill by a progressive course of technical training in mechanical laboratory—a department of their instruction which was at present too restricted owing to want of funds, but which he hoped to see set upon a broad and liberal footing, encouraged as they had been by the generous recognition of the Lord Provost and Town Council in their allocation of the residue grant. In the meantime they were doing the best they could with their limited means, and turning a portion of their technical instruction to good account by conferring a boon upon the poor of the city in supplying the more necessitous of them with dental appliances constructed by the more advanced students. In the allocation of prizes for general excellence in hospital practice, the committee after careful consideration of the work in all departments had awarded the senior medal to Thomas Dilks Page; Mr. George Arnold Wood, Mr. John Kyle Mackintosh, and Mr. Robert Lindsay receiving certificates of merit. In the junior division, Mr. Robert Atkinson Hudspeth gained the medal, while Mr. Arthur Heron and Miss Lillian Murray were found to be worthy of honourable mention. In the class competitions, T. Dilks Page gained the medal in dental anatomy, in dental surgery, and in dental mechanics. Mr. Chas. F. Page gained the bronze medal in dental surgery. The Ezard medal for a special competition in gold fillings was carried off by Mr. George Arnold Wood, and the Macgregor medal for the best all-round senior student, decided by the votes of his fellows, was awarded to David Robertson Campbell. In the medical classes attended at the University or the extra-mural school, the dental students had as usual stood well up in the award lists. As regarded hospital work, during the six months ended June 30th, the number of cases treated by students had been 6,242. Of these cases over 2,000 had been those of teeth saved by filling and 400 cases treated and preserved by "scaling," whilst 74 patients received artificial dentures and 27 children were supplied with regulating appliances. The remaining cases were extractions, including the administration of anæsthetics to over 200 patients. Dr. Littlejohn congratulated the school on the satisfactory report which had just been read. The Dental School had now, he said, taken its position among the necessary institutions of Edinburgh. It was as necessary to their well being as the Royal Infirmary, and he was pleased to think that the College with which he had the honour of being connected had recognised its value, and that the Town Council, of which he happened to be an officer, had also, in a very munificent manner, shown its appreciation of what the Institution was doing for the good of Edinburgh. The prizes were thereafter presented to the successful students, and the proceedings closed with the award of a vote of thanks to Dr. Littlejohn for presiding.

THE DENTAL HOSPITAL OF LONDON.

The Annual Conversazione and Prize Distribution was held, as last year, at the Royal Institute Galleries, Prince's Hall, Piccadilly.

To those who are familiar with this pleasant function it goes without saying that a delightful evening was spent, each year seems to vie with the other in the excellence of the programme provided for the entertainment of those who go to do honour to the prize winners.

The Meister Glee Singers, amongst others, contributed to the musical part of the programme, and the mention of their name requires no further word of praise. The rooms were not one whit less filled than on previous occasions.

The Dean (Mr. Morton Smale), dispensing with a formal report, contented himself with a few introductory sentences, in which he was able to make the gratifying announcement that in no period of its history had the School been so successful as during the past year when fifty-four students were entered, thus beating the record by a round dozen. Referring to the proposed new hospital, he urged its claims for subscriptions from those outside the profession, and heartily eulogized the enthusiasm of the students in not only subscribing £100 themselves from resourses which have so many other enticing claims upon them, but also in so energetically organizing a concert, which realized a net profit of £173. He ventured to think that there was no other hospital in London, or indeed in the United Kingdom, where the students would show as much enthusiasm for their Alma Mater. In conclusion he introduced Professor Sir W. H. Flower, K.C.B., F.R.S., who made the awards as follows :—*Saunder's Scholar*, Mr. W. J. May. *Ash's Prize*, Mr. W. May; Certificate of Honour, Mr. W. W. Gabell. *Dental Mechanics*, 1st prize, Mr. W. W. Gabell; 2nd prize, Mr. J. T. Hankey; Certificates of Honour, Mr. A. B. Densham and Mr. M. Gosschalk. *Operating Prizes*, 1st prize, Mr. J. R. Freeman; 2nd prize, Mr. W. J. May; Certificates of Honour, Messrs. A. B. Densham, W. F. Mellersh and W. W. Gabell. *Dental Anatomy*, 1st prize, Mr. J. Main Nicol; 2nd prize, Messrs. W. J. May and A. N. Sumerling; Certificates of Honour, Messrs. W. A. Densham, N. G. Bennett, W. W. Gabell, H. Reeve and D. Dunlop. *Dental Surgery*, 1st prize, Mr. J. Main Nicol; 2nd prize, Mr. E. Harrison; Certificates of Honour, Messrs. A. B. Densham, A. N. Sumerling and J. R. Freeman. *Student's Society Prize*, Mr. E. Moseley.

Sir William Flower then delivered an address (see page 343).

At the conclusion of the address a hearty vote of thanks, proposed by Mr. Christopher Heath and seconded by Dr. Hare, was carried amidst applause.

APPOINTMENTS.

Mr. RUSHTON, L.D.S.,Eng., to be Dental Surgeon to the Hospital for Consumption and Diseases of the Chest, Brompton.

Mr. A. JOHN CARDELL, L D.S.,Eng. to be Honorary Dental Surgeon to the Western Dispensary of London.

Mr. JOHN P. ROBERTS, L.D.S., to be Demonstrator to the Liverpool Dental Hospital.

Mr. J. F. Silk, M.D.,Lond. has been appointed anæsthetist and instructor in anæsthetics; and Mr. George Rowell, F.R.C.S., assistant-anæsthetist to King's College Hospital, London. Both these gentlemen are also attached to dental hospitals.

OBITUARY.

WE regret to announce the death, after a short illness, of Mr. Percy Harry White, M.B., C.M.,Edin., M.R.C.S.,Eng., &c., of 34, Bruton Street, London, W., fourth son of the late Richard White, of Norwich.

NEW PREPARATIONS.

WE have received a specimen of Dr. Bengué's Ethyl-Chloride Bulbs, the special advantage of which is, that the nozzle is controlled by a screw stopper, so that little or much, as is desired, can be used and waste prevented. Those who use this drug will find these tubes an advantage.

THE DENTAL RECORD, LONDON: AUG. 1, 1893.

SCIENTIFIC RESEARCH.

In his address to the Students of the Dental Hospital of London, Sir W. Flower lamented that among the many discoveries concerning the evolution of dental organs, which have been made during the passed few years, so few can be accredited to our own countrymen. A note of sadness, caused by the same reflection can be traced also in Mr. Charles Tomes' speech delivered at Birmingham to the Microscopical Section of the B.D.A. The latter, it is true, hopes that this recently started section will be a sufficient incentive to urge men forward, so that in time this stigma may be removed. This we certainly hope, though it does not appear to us quite so clear that a lack of incentive is the only cause at work. It is said that we are the children of circumstances, and, if we look back at the careers of the majority of men who have made their mark in any particular branch of study, it seems as if one might almost conclude that it was often the circumstances in which they were placed that led up to the incident or discovery for which they have become famous. It may, perhaps, be urged, that in making this statement, we are looking at this question from the point of view of the individual made famous by the discovery rather than from that of the true scientist to whom the discovery itself o'ertops and obliterates any individuality. We plead guilty, but then so have Sir W. Flower and Mr. Charles Tomes, and after all science benefits whatever may be the motive of the worker. It is impossible that all shall share equally in the opportunities that arise. We cannot all, like Professor Cope, live near geological strata containing many prehistoric remains, which are within the range of ordinary excavation. We cannot all have charge of, and find our daily labour in the midst of immense collections like Sir Richard Owen or Sir Richard Flower. Nor has our early training qualified us all for the work of investigation. Considerations such as these may seem rather to take the edge off such remarks as those of the two speakers first mentioned, at any rate they remove any symptom of reproach, and level them down to one of pure regret. Regret it is, and must be, for the occurrence of this opportunity might often bring to light men well qualified for scientific work, men whose labours and interests might otherwise drift off into some other channel.

There is yet another way in which this matter may be viewed, which may be expressed in the question—"Do we all recognise the opportunities that occur to us?"

Chances, we are told, we all have but we do not take them. In other words we lack the interest which should spur us on over the rough road of patient toil that must of necessity be passed before we reach any sort of result. This interest the Microscopical section of the B.D.A. intend to stimulate, and if it does so, and there is every reason to hope it may, it will have accomplished far more than many similar meetings have been able to boast of. One barrier to advance it may certainly remove. It will soon enable men to look at questions in an attitude of doubt, it will enable them to get away from the dogmatic teaching of their earlier years. We suppose dogmatism is needful till men have mastered the existing state of knowledge, but it certainly would serve a very useful purpose if students could change their spectacles when they pass out of the schools.

Notes and News.

Mr. Walter Reginald Roberts, of Tamworth House, Lichfield, writes to inform us that he has taken the name and will henceforth be known as Walter Reginald Coleridge-Roberts.

The vacant examiner-ship at the Royal College of Surgeons has been filled by the election of Mr. Howard Mummery. Mr. Mummery is so well known that any further introduction is needless, but it is interesting to note that his appointment appears to have met with considerable approval from both present and past students.

The vacancies on the Council of the College have been filled by the re-election of the two old members, Messrs. Macnamara and Pemberton, and by the election of Messrs. Mayo Robson and Henry Morris. The former is the surgeon of Leeds and the latter is well-known to those of us who took their medical studies at the Middlesex Hospital. Mr. Norton, the adopted candidate of the Association of Fellows, failed by a few votes, he had the misfortune to be opposed by a junior colleague on the staff of his hospital.

We note with pleasure that Mr. Thomas Gaddes, who edited this Journal for so many years, was at the annual meeting, held June, 9th, elected an honorary member of the Colorado State Dental Association.

To the, perhaps, crowded ranks of dental journals we have to notice a new member. The first number of the *Pacific Coast Dentist*, appeared on June 1st, and may certainly be congratulated on its matter and style. Some abstracts from its pages we publish in this issue.

The current issue of the *Cosmos* contains an interesting note by Dr. Miller on an instance of caries developing in the teeth of a manatee. Caries in the teeth of wild animals is not of frequent occurrence, though met with fairly often among domesticated animals, who live a more or less unnatural existence. The occurrence of caries in an animal, whose snout is continually being washed out with salt water strikes us as strange, but Dr. Miller, quoting Brehm's "Animal Life," mentions a curious habit, which may explain the present case. It seems that this animal "eats so much that his stomach and intestinal tubes are completely filled with food, and then, when he is satisfied, often lies down in shallows, so that his snout extends out of the water, ... and sleeps away several hours in that position." It is during this interval that Miller supposes the fermentation of vegetable matter to have taken place.

Professor Miller appears to adopt the classification which makes the Sirenians a sub-order of the Cetaceans, by many, however, they are regarded as a distinct order, the points of difference being many and marked. One of the most interesting of animals, Steller's Sea-cow belongs to this order, or rather we should have said belonged. First seen in 1741, and described by Steller in 1751, all were destroyed, being exceedingly good food, by 1782. Steller describes them as mild and inoffensive gregarious animals, who browsed off the seaweeds along the coasts of Kamtschatka and were so attached to each other that when one was harpooned the others made incredible attempts to rescue it. Their compact, ivory-like bones and enormous size (there is the skeleton of one in the Natural History Museum, 19½ feet long, and they are said to have grown to 35 feet), rendered them of great weight, forty men with ropes being required to drag a body to land.

Mr. Lawrence Read has adopted an excellent idea for strengthening plates. It is especially adapted to upper plates with the front teeth standing, and where it is desired to keep the plate across the roof of the mouth as narrow as possible. He takes a piece of round half wire having a thickness about equal to that of a sixpence, this is fitted across the palate of the plaster cast and waxed in position, in the zincs this is of course represented by a ridge which strikes up a groove across the gold plate and adds greatly to its strength. The gum readily grows into this so that little or no space remains. Mr. Read states that the result of adopting this little plan, fully met the expectations he had formed.

Guy's are jubilant over the success of their fête, of which a report appears elsewhere, and it certainly appears to us they are justified in so being. The medical and surgical wards with their floral decorations met with considerable admiration, a continuous stream of visitors passing through, eager to fathom the mysteries of the great hospital. To dental men the centre of attraction doubtless lay in the rooms of the dental department, where the excellent arrangements for students and patients aroused interested attraction.

The following extract from the *Pall Mall Gazette* is worthy of note, the more so as this paper has the courage of its convictions and refuses such advertisements, " There is much force in the opinion expressed by the British Medical Journal in a leading article upon the Alabone *v.* Morton case, heard before Mr. Justice Wright last week, that the newspaper which continues to admit in its colums of advertisements of remedies proved to her utterly worthless (certain electropathic belts, for example), or inserts flattering notices of such remedies in consideration of receiving advertisements of them for insertion, acts unworthily of the highest and best traditions of journalism, and in a manner calculated to bring an honourable profession into disrepute.

It would be a pity to spoil these remarks by adding to them, though we would have wished that, not only those concerning "remedies proved to be utterly worthless" .should be excluded, but that the condemnation should be extended to the number of advertisements, which so offend against good taste, though the drugs, etc. mentioned, may not be worthless, that, in our humble opinion, they are equally calculated to bring an honourable profession into disrepute.

Although a number of metals are found in their natural state, with the exception of gold, platinum and bismuth, this does not form the ores from which the metals are principally extracted. Copper, silver, antimony and mercury have all been found in sufficient quantities to form commercial sources of the metals, but this is the exception. Mercury for instance is found native, collected in pockets, but its chief ore is cinnabar, a compound white sulphur, but when pure containing about 86 per cent. of the metal.

We notice the report that, a quicksilver mine has been discovered at Ohaeawei, Bay of Islands, New Zealand. There is said to be an immense quantity of ore in sight, and, when the spade is inserted in a block of carboniferous clay, the quicksilver squirts out. This mine promises to be a most valuable property. We understand this to be the first true quicksilver lode found in this part of the world.

We regret to have to record another death during the administration of nitrous oxide. It occured in the practice of Mr. Grundy, of Batley. The patient was a miner, aged 39, who had suffered from toothache for some time and came to Mr. Grundy to have them removed. The patient requested to have gas administered. Mr. Grundy proceeded in the usual way, but the patient, after taking four or five very slow inspirations, became unusually livid, or rather dark. Mr. Grundy cleared the air passages by depressing the base of the tongue with the handle of the forceps. He was unable to catch hold of the tongue and pull it out. He then laid him on his back on the floor, artificial respiration being kept up for fully ten minutes, medical help being sent for. At the inquest Mr. Watts, surgeon, gave the following evidence.

He did not know the deceased. He first saw the body of the deceased about half-past three that (Wednesday) afternoon. It was then laid out. The lips and tongue were exceedingly livid. He opened the chest and found the left lung healthy, but very greatly congested. The right lung was also very much congested. The right side of the heart was full of dark fluid blood. The valves of the heart were healthy ; the tissue of the heart was flabby and fatty. The liver was healthy, and kidneys were the same, but dark. There was a small quantity of liquid food in the stomach. The scalp was extravasated. The brain was congested both superficially and in its substance, otherwise it was healthy. He considered the cause of death was asphyxia. He considered that weakness of the heart could have been diagnosed from its beats, but as the valves were sound he thought no danger could have been anticipated. There had only been thirteen cases recorded of persons dying while under the influence of gas, and gas had been administered in millions of cases, and only three had been attributed to gas itself. In this case there was nothing else to cause the death, the organs were in such a state, except the heart, that the man was not a person expected to die suddenly. Externally and internally he was considered to be a fair healthy subject?

After hearing other evidence, the jury returned a verdict of "Died by misadventure," and stated they did not attach the slightest blame to Mr. Grundy.

In an action for malpractice against a dentist at Manchester, the plaintiff was awarded £15 damages. It seems that the defendent failed in his attempt to extract the whole of a tooth, one root being subsequently removed by another dentist, moreover considerable hæmorrhage followed the attempt, a medical man having to be called in. We candidly confess that if the mere failure to remove a tooth and the subsequent occurrence of hæmorrhage constitutes "malpraxis" most of us have been guilty many times over. It would be interesting to know the part played by the medical man and by the second dentist, it occurs to us they may not quite have lived up to the motto "Do unto others as you would be done by." It is easy enough to fan the flame of irritation in an angry patient, but it is neither right nor just.

The importance of children's teeth has called forth so much attention at home, that we are glad to be able to reprint the following note taken from the pages of *The Lancet.*

"A tooth is worth more than a diamond," said Don Quixote on a memorable occasion; but the profound physiological truth of the saying has but small practical force even in the nineteenth century. Switzerland holds a bad pre-eminence in the abuse of this precious auxiliary to digestion; indeed, dentists, British or American, who practise in her chief towns are unanimous in declaring that nowhere is neglect of the teeth, with all its disastrous and (on the side of personal comeliness) hideous consequences, so conspicuous. Not a day too soon the Société Odontologique of Geneva, in concert with the Minister of Public Instruction, has made a series of visits to the primary schools with the view of examining the teeth of the pupils. Their report, just issued, is fraught with striking revelations, not without relevance, we are afraid, to the same class of schools in other countries. Teeth all the world over, they assert, are degenerating—a result (amongst other causes) of the perfection of the culinary art and the diminished use of mastication. We can, however, minimise this inevitable process and by timely precautions guard against tooth-enfeeblement and caries. Every six months the mouths of children seven years old should be examined by the dentist, for at that age the "eventual points of caries" can be treated in time. Later, at the age of ten or twelve, the mischief is already advanced, but not so far as to be quite beyond professional relief. The Société Odontologique of Geneva philanthropically makes these inspections gratuitously in the case of primary schools containing that portion of the young generation which is less favourably circumstanced for calling in the dentist. The *modus operandi* of the Society is this:—On visiting a school its representative addresses his young audience in popular language on the genesis, the growth, the uses and the ailments of the tooth and winds up with a practical demonstration of how much may be done to keep it strong and healthy. The first place in this conservative duty he assigns to "attending to the mouth"—keeping it clean by washing it and washing the teeth after every meal. The widespread neglect in practising this precaution the Société proves by statistics: Out of 413 boys inspected, 370 (that is, 90 per cent.) never brushed their teeth at all; out of 459 girls, 320 (or 70 per cent.) were equally neglectful; whilst in nearly all of them caries was already declared or far advanced—more than 75 per cent. of these young persons requiring the urgent interference of the dentist. After his visit the Société's delegate draws up a "schema" or dental plan indicating in each case the state of the child's mouth, the teeth to be specially protected and the general treatment to be adopted. This "schema" is sent to the child's parents, who are thus instructed as to what has to be done. In these instructions the Société insists on careful brushing of the teeth from the age of seven and upwards as the best means of averting caries, which is so injurious to the general health. "Recent observations," adds the Société's report, "demonstrate in neglected mouths the presence of the majority of the germs or microbes which generate infective maladies. Cleansing the mouth, therefore, is a duty imposed on the community from every point of view." All honour to the Société for its philanthropic work, which, as already hinted, might with advantage be imitated elsewhere.

Journalistic Selections and Abstracts.

ANCHORAGE OF PROXIMATE FILLINGS IN THE BICUSPIDS AND MOLARS.

By G. V. Black, M.D., D.D.S., Jacksonville, Ill.

The great mass of proximate fillings in the bicuspids and molars are in proximate cavities that are also open to the occlusal surface, and, thus being exposed upon one surface, to the force of mastication, must be able to bear the entire strain exerted by the most forcible closure of the mouth. This the writer points out, may not occur in more ordinary usage of the teeth, but at some time a bit of bone or other hard substance will be caught upon the filling itself and take the entire strain, and if its anchorage is insufficient it will be displaced.

The sound tooth has ample strength to withstand the full strain of the muscles closing the mouth. But how much has it to spare, how much may a tooth be weakened by caries and still withstand the full strain of the muscles closing the mouth. This is an unknown factor, a matter upon which we have only common observation to guide us.

If we seek to inquire into the strength of our filling materials we will find the same to be true. We may be able to find scientific determinations of the tensile strength of gold wire or rods of certain sizes, but nothing of the tensile strength of masses of gold built up of gold foil. We may be able to learn from scientific data the crushing strain that will be borne by blocks of cast, or wrought gold, but we have no scientific data determining the crushing strain that will be borne by blocks of gold built up from gold foil. Both the tensile strain and the crushing strain of gold built up from foil are constantly brought to the test in fillings, but we have had no means of accurately determining either. We have only the observation of practical experience, unscientific and inaccurate.

A failure in the anchorage of fillings is shown first by the filling being dislodged, or forced out of the cavity by the force of mastication.

Second, by breakage of some wall of the cavity, against which anchorage has been placed. Third, by a slight movement of the filling under the strain of usage which is sufficient to render its margins imperfect, or leaky.

Failure of the first kind is rare among the better class of operators and occurs only as the result of some oversight or accident.

The second is much more frequent than it should be, and results from errors of judgment in the arrangement of the strain upon the frail walls.

The third seems not to have been generally recognised. It occurs when the *size* of the anchorage points are insufficient so that there is a bruising of the metal under the strain of usage in such a way as to allow the filling to move slightly and thus render the margins imperfect. This gives opportunity for the recurrence of decay.

In these proximate cavities it is necessary to provide in anchorage, against two important directions of strain, the *crushing strain* and the *tipping strain*, or the ability of the filling to support the load brought upon it and the ability to withstand lateral strains calculated to force it out of the cavity.

The crushing strain is the force of mastication brought directly upon the surface of the filling. This strain is in turn transferred through the filling to the cervical wall of the cavity in all of the above mentioned class of cavities. Therefore it is the cervical wall of the cavity that must carry the load.

Mr. Black describes two forms of insufficiency which combine to cause failure. First the seat of the filling is insufficient in size. Second, the seat of the filling, *i.e.*, the cervical wall is defective in form. This wall of the cavity must be sufficient in extent to carry without injury the strain of the closure of the jaws, otherwise the walls will be crushed, or the gold resting upon it will be crushed, either of which will be a course of failure. For if the gold or the wall give in the least, the margins, of the fillings become imperfect and leaky, and recurrence of decay with the final loss of the filling is the result. The seat of the filling must be so shaped in extent and form that there will be no tendency to sliding under the influence of heavy strain. Its extent is often much limited by the circumstances of the case and then must be supplemented in other positions. For instance a cavity, involving a considerable extent of the occlusal surface for which no sufficiently broad seat in the cervical wall can be had on account of the proximity of the pulp, it is necessary to form a step between the pulp and the occlusal surface, which will serve as an additional seat.

The form of the seat is as important as its extent. There is no form of surface that will carry a load placed upon it so well as a flat surface at right angles to the direction of the strain.

I have said that the size should be sufficient to bear the whole strain of the closure of the jaws. At first glance this would seem to indicate that the size of the seat of the filling should be the same for all proximate fillings, for each, large or small, must be able to bear the whole force of the closure of the jaws, and yet this does not hold for after all a seating surface larger than the surface exposed to the crushing strain cannot add to the strength of the filling unless it can be shown that the filling material is capable of sustaining a greater crushing strain than well supported tooth structure, which it certainly will not, whether it be gold or amalgam. Therefore if the seat of the filling be well formed there can be no advantage in making it larger than that surface of the filling exposed to the strain. It is true, however, that the smaller fillings are not the stronger fillings. But while within certain limits we may improve the strength of small fillings by making them larger, we cannot improve them by making the seat of the filling larger than the exposed surface. This is as much as to say that all that gold will bear is all that it will bear under a crushing strain. The weakest portion will give first, whether it be the cervical or occlusal and either will destroy the filling.

Therefore, in fillings of this character there should be no undercuts in the sense of making the filling broader buccolingually at the cervical wall than at the occlusal surface, for whenever this is done every crushing strain has a tendency to cause the filling to leave the walls of the cavity at all points of undercut. The filling will be much stronger if the walls are so cut away that the cavity will be slightly broader at the occlusal surface, for in this case the buccal and lingual walls will become a source of support instead of a source of weakness. Also the building of the filling solidly and perfectly will be facilitated. This matter of so shaping the cavity that the building of the filling will be made easy should not be ignored. The plea that tooth structure should not be sacrificed is wrong both in theory and practice. When a carious tooth is presented for operation the question to be answered in the operation is, how can this tooth be made strongest, or how can it be made to endure the longest, giving good service. The question of saving this or that portion of the tooth structure simply because it is tooth structure should not be entertained for one moment.

The tipping strain is the result of any force that is brought in such a way as to pry a mesial filling to the mesial, or a distal filling to the distal, and thus throw it out of the cavity. When a large cavity in a molar or bicuspid is perfectly contoured rebuilding its marginal ridge (which is unnecessary), this strain is often very great, especially if the cusps of the opposing teeth strike in such a way as to bring a strong mesial or distal pressure. This strain is, however, much under the control of the operator, who can, and generally should so form the surface of the filling as to reduce this strain materially without too much reduction of the of the usefulness of the occluding surface. This manner of reducing the tipping strain by rounding off the surface is often carried much too far, so far indeed as to materially lessen the usefulness of the tooth or even to cause serious wedging of food between the teeth and thus destroy the usefulness of both this and neighbouring teeth. If the anchorage against the tipping strain is ample it should be built to full easy occlusion except that the marginal ridge should not be restored. If the anchorage against the tipping strain is not considered as perfectly good and strong, the occlusal surface should be rounded toward the proximate surface more or less, and in such a way as to cause food to slide over the filling without being so caught as to cause a serious tipping strain. However, this rounding should never be carried to such an extent as to cause food to wedge into the interproximate space and thus become a source of injury. The filling must be made to protect the interproximate space whatever else be its shape.

In small cavities, those occupying one-third or less of the proximate surface, bucco-lingually, anchorage against the tipping strain may be made by grooving the buccal and lingual walls of the cavity. These grooves should be placed as deeply (*i.e.*, as far as possible from the surface of the tooth) in the dentine as the depth of the cavity will allow. There is nothing gained by cutting them deeply into the buccal and lingual walls while the depth materially weakens the tooth. They give greater strength when made broad and shallow than when made narrow and deep. The rule is that the greater the surface of gold, solidly packed, that can be made to impinge upon the anchorage surface the stronger the anchorage will be. Narrow deep grooves are contra-indicated while pits are valueless for this purpose.

It is much better to anchor against slight slopes having the elements of the dovetail in which the strain is distributed over a more considerable surface thus preventing the condensation of the gold against the anchorage points.

When the cavity occupies more than the middle third bucco-lingually of the proximate surface the rule should be that no attempt be made to anchor against the tipping strain by grooves in the buccal and lingual walls, for then the necessary grooving will become a source of weakness and render the walls too frail to safely support the filling. Indeed when a cavity has become of this extent it ought to be cut widely to the buccal and lingual in order that its margins may be so removed from near approach to the neighbouring tooth as to render them self-cleaning—extension for prevention of recurrence of caries—and this renders any sufficient anchorage by grooves in the buccal and lingual walls impracticable. In this case and in all larger cavities the anchorage should be made by what is commonly known as a dovetail cut into the occlusal surface of the tooth. This cut should not be made very deep, a trifle more than the thickness of the enamel generally being sufficient. Indeed a deep cut in this position becomes a source of weakness instead of strength for the reason that it renders the buccal and lingual cusps, especially in bicuspids, liable to be split off by the force of the occlusion, a matter that must be especially guarded against. We must always remember that in preparing our anchorage we should guard the strength of the tooth in its entirety. This dovetail in the occlusal surface should have upon its buccal and lingual walls such a form that the filling cannot slide out of the cavity. The bottom of this cut should be flat and well squared out at its angles in order to form a firm seat for this portion of the filling, and especially there should be no slope toward the open cavity. In many cases the original decay will be of such form as to make it difficult to avoid some such slopes, but every available means should be used to form steps, and in this way destroys the influence of the slopes. Dr. Black states that in a few cases he has seen solid fillings in such dovetails stretched by the force of mastication sufficiently to allow the main portion of the filling to leave the buccal and lingual walls of the cavity, and he recommends filling these anchorage slots with platinum gold when a very heavy filling is to be supported.—*The Dental Review.*

DENTISTRY IN THE FAR WEST FORTY-FIVE YEARS AGO.

The "Pacific Coast Dentist" Gives the Following Abstracts from a Letter of Foster Flagg, Written when the California Fever led him out West in 1849.

"After landing our baggage and stores (pork, flour, beans, biscuit, etc.), we pitched our tent on the high point known then as 'Rincon Hill,' beyond 'Happy Valley.'

"Here I led a varied and peculiar life, shooting dipper ducks in the bay, going over to Contra Costa (now Oakland, I believe), to cut knees for lighters, for which we got an ounce ($16) apiece; playing the flute in the evening in the Graham House, which was the finest gambling saloon in the city, and which occupation was then *eminently* respectable, as it paid $8 an hour! and with my dental 'kit'—which consisted of four pair of forceps, a dozen hoe, hatchet and spoon-shaped excavators, half a dozen pluggers, a dozen books of tin-foil, a vial of creosote, a box of arsenic and acetate of morphia powder, half-a-dozen vials of chloroform (worth ever so many times their weight in gold dust), a wad of cotton and a vial of sandarac varnish—I responded to the occasional demands for dental service.

"My first operation was the extraction of an upper molar. Upon the patient asking the 'fee' I told him 'Extraction is worth five dollars a root, and, as your tooth has three roots, it will be fifteen dollars,' upon which he replied in the polite vernacular of that period, 'Fifteen dollars be damned; put on the ounce weight, Doc.!' and so gave me sixteen dollars.

"I left San Francisco for the mines on the 22nd of the following February, a day noted at that time as one of the stormiest of the stormy. The wind blew a fierce gale; but we had allowed to start that day, so 'start' it was. From that time on for seven years I mined gulch, river and bar, kept trading post, teamed from Stockton to Mokelumne Hill, drove cattle, butchered and ranched, and during all this time, at my varied camps, from the Tuolumnes to the Mokelumnes, I did what dentistry was required—filling, extracting and 'treating nerves,' either by arsenical application or by partial luxation of the tooth.

"While on a bar on the Mokelumne River about five miles from Mokelumne Hill, I had things quite 'fixed up' for operating, and succeeded in so impressing my patients that some came from distances of fifty miles for services. My chair was a barrel cut in this wise (see drawing in letter), with a stick with 'head rest' attached, and the lower half of the barrel stuffed firmly with pine needles and covered with a strong potato sack, over which I had an *elegant* cover of striped calico. A tin cup of water sufficed to rinse the mouth, and the patients, from force of habit, spit on the floor of the office! which was the ground, as operations were usually performed in front of the tent or log house in the open air."

INLAYS.

By L. L. Dunbar, D.D.S., San Francisco.

For minute "pinhead" cavities there has been recommended the use of different sized cylinders of vulcanized white rubber. These are inserted with oxy-phosphate, and, after being cut off, are wel polished, making a more durable filling than oxy-phosphate alone, and quite as sightly. The use of this method ought to be more general, as it is a really valuable means for meeting the cases under consideration. Starting from this idea I have been for some time successfully employing glass cylinders for the same purpose, using the old-fashioned opalescent glass, so common thirty or more years ago as curtain supports in parlor or drawing-room decoration. A piece of this can be heated over an ordinary bunsen flame, and, if care is used, can be drawn out into round sticks of various sizes down to the diameter of an ordinary pin. No color-shading is required, or, if necessary, cylinders of various shades can be provided, although this form of glass presents a shade more nearly in accord with translucent enamel than any result ever attained by fusing glass inlays. They are more easily handled, and half-a-dozen satisfactory inlays can be made while one is being made in any other way—the only requisite being several sizes of fissure burs (square end) with an assortment of glass cylinders of corresponding diameters. Prepare the cavities, several at a time, taking the precaution to isolate the teeth to be operated upon by applying the dam. After selecting the appropriate cylinder for each cavity, nick it on two sides where it is designed to break off, and the inlay is ready for insertion. One batch of oxy-phosphate will then do for all that have been prepared.

After allowing a sufficient time to set perfectly the protruding cylinder can be stoned down and polished, the result thus attained will be an inlay nearly invisible ; in every way satisfactory from an artistic standpoint, and what is better still, at a saving of time and expense that will be appreciated by patient and operator alike.—*Pacific Coast Dentist.*

THE DISADVANTAGE OF HIGH-TENSION CIRCUITS FOR DENTAL WORK, AND HOW THEY MAY BE ALTERED TO CIRCUITS OF LOW POTENTIAL, SUITABLE FOR DENTAL WORK.

By Dr. PETER BROWN, Montreal, Canada.

THE tendency of central stations to increase the potential of their power-circuits raises a new complication in the application of electricity to dental practice. In the first place, it increases the dangers of the operator and patient getting a shock from accidental contact with exposed parts of the apparatus ; then it necessitates the putting of lamps or resistance coils in the circuit, in order to reduce it low enough to render it safe to use about the mouth ; this involves additional expense for rheostats and resistance lamps, and complicates the wiring.

The usual voltage of power-circuits is now from two hundred and twenty to five hundred volts, it depends in some cases on the distance to which the line is carried from the central station, and in others on the use to which the circuit is put. For stationary motors the two-hundred-and-twenty-volt circuit is usually used, and street railways use the five-hundred-volt circuit ; either of these may be economically transformed into low potential circuits, which can be safely used in all operations where electricity is indicated, or where it is desirable to use it for motive power.

The method used by the writer is as follows :—A half horse-power motor, running off a two-hundred-and-fifty-volt circuit, is belted to a counter shaft, this shaft runs a quarter horse-power-one-hundred-and-ten-volt dynamo, and a sixth horse-power, ten-volt dynamo. In the first dynamo we get a current of two and a half amperes at one hundred and ten volts potential, and in the second a current of ten amperes at ten volts potential. Two sets of wires are led from this miniature central station, which is placed in the basement of the office, to the chair where the one-hundred-and-ten volt current is used to run a dental engine motor, a lathe motor, and a fan which is used on warm days to keep the air in circulation· The current from the ten-volt generator is used to run the electric mallet, mouth-lamp, root-dryer, cautery and gold annealer. By this arrangement the two amperes of current which enters the office at a potential of two hundred and fifty volts is transformed and divided into a current of ten amperes at ten volts potential, and a current of two and a half amperes at one hundred and ten volts. Without this means of transforming the power it would be a difficult matter to use such a high-tension circuit as two hundred and fifty volts to heat a cautery or to use it for a root-dryer or mallet. Where one has to pay for his electric power by meter, it would cost a great deal to use it for cautery purposes, as the heating power of a current depends on its quantity or number of amperes, and not on its potential or number of volts, and it is the amperes we pay for. To use a current of two hundred and fifty volts, we would have to put five fifty-volt—sixteen candle power—lamps in series, then we would get a current of one ampere, and the voltage of the current would be very much reduced; but this involves a great waste of energy, as we are expending the greatest part of the current in producing light which is not wanted at the time, and we have the additional expense of maintaining lamps. If we wanted a greater current than one ampere we remove the sixteen-candle-power lamps and put in thirty-two-candle-power lamps instead; this will give us two amperes; and we can go on increasing the quantity indefinitely until the maximum capacity of the circuit is reached by using several banks of lamps. This is one method of reducing it, and it is usually the most satisfactory. The fifty-two-volt alternating circuit may be adapted for cautery purposes by a small converter; a current of two amperes, at fifty-two volts, can be transformed into a current of ten amperes and five volts.

There is now on the market a machine called a motor-dynamo or direct current transformer, made by the Crocker-Wheeler Electric Company of New York. It consists of a motor with a double-wound armature; one side is made to receive a high pressure current, the other to give it out at a low pressure. The idea is the same as mentioned in the beginning of this article, only that the motor and dynamo are on one shaft instead of being connected by means of counter shaft and belt. A machine of this kind would be the proper thing for our purpose, as we could have one made to receive any current which might be convenient for us to work from, and give it out at any pressure we might decide on, say ten volts. We could then contract for one ampere of current at two hundred and fifty volts, or half an ampere at five hundred volts, or two and a half amperes at one hundred and ten volts. Either of these would give us a quarter horse-power; the dynamo side of the machine would then give us twenty-five amperes at ten volts or two hundred and fifty watts; and this is just what we want,—as was mentioned before, a current of low pressure and large quantity. This machine can be placed in an adjoining room, or on a shelf in the basement or in any convenient place. As it is almost noiseless in its action it could be placed in the office, provided it could not be interfered with by curious people, although their curiosity might receive a check if they got hold of the primary or high pressure side of the apparatus. Once the apparatus is installed, we have nothing to do but turn the handle of the starting box and leave it alone until we are through for the day. It will take care of itself. The wires from the dynamo side are brought to the chair and connected with our apparatus; for the engine we can have a one-eighth-horse-power ten-volt motor with its regulating box or rheostat; this will require about ten amperes to run it, according to the work we give it to do; then we have still fifteen amperes to draw on for any other purpose we may wish to use it for, and we are absolutely safe from shock.

Another method of transforming a current is to use storage batteries. We can connect the battery to the power-line and put in suitable resistance, and take our power from the battery as we require it. This is not so satisfactory as using a motor-generator, but it is mentioned so that one can use it if he wishes.

If one is so situated that he cannot get power from a direct current, but can get the alternating current, it may be used by putting in an alternating current motor of a half horse-power and belting it to a direct current dynamo wound for any voltage we may desire to use; fifteen volts should be about the maximum voltage used about the dental chair. Alternating-current motors of one horse power are now on the market. A motor of this class of about one-half horse power would be ample for all the requirements of dental work. So far small motors for the alternating current have not been a success, and it cannot be used for the electric mallet at all, no matter how we reduce it; but it may be used very satisfactorily for cautery work by having a small converter made by which we could change a current of fifty-two volts and two amperes into one of ten amperes and ten volts; the number of watts remains about the same,—that is, one hundred allowing a loss of four per cent. in the converter.—*International.*

NASCENT OXYGEN.

By Edward C. Kirk, D.D.S.

When hydrogen-peroxid is broken up in contact with effete matter,—pus, for example,—it gives up its oxygen in the atomic condition. Before the oxygen atoms can unite with each other to form molecules, and so have their affinities to a certain extent self-neutralized, they exert their intense activities upon the organic matter and destroy it. The loss of its extra atom of oxygen simply reduces the hydrogen-peroxid molecule to the monoxid or water; thus H_2O_2 decomposed$=H_2O+O$.

It is evident from the simple theoretical examination which we have thus made of this compound, that it possesses unique and valuable properties as a destroyer of effete organic matter. It depends for its activity upon its nascent oxygen, and its by-product is water, both of which are non-poisonous and without deleterious effect upon vital tissue.

All of the peroxids in the group cited *i.e.*, H_2O_2, Na_2O_2, MgO_2, BaO_2, possess strictly analogous oxidizing properties by virtue of their loosely held extra atom of oxygen. They differ relatively from each other by reason of the differences in the several positive atoms which constitute the variable factor of the group, and which impress in each instance the individual character upon the molecule of a given member of the group. Their relative activity as oxidizers varies with the chemism between the oxygen and the positive atom in each instance, so that this factor, in connection with the chemical and therapeutic character of the positive atom in the peroxids, determines their range of practical application. The uses of the hydrogen and the sodium peroxids have become matters of record. A possible usefulness for the magnesium peroxide in connection with the treatment of discolored teeth seems to be indicated by the desirable properties of its decomposition products,—viz., nascent oxygen and magnesium oxid ; thus $MgO_2=MgO+O$. The magnesium peroxide is easily made by the mutual decomposition of sodium peroxid and magnesium sulphate. The reaction is as follows : $MgO_4+Na_2O_2=Na_2SO_4+MgO_2$. When magnesium sulphate and sodium peroxid are mixed in equivalent proportions the reaction takes place, and the mass may be packed into a discoloured tooth and left for several days or weeks. The reaction between the magnesium peroxid and the organic matter in the canal and tubuli takes place very slowly, so that the evolution of nascent oxygen proceeds continuously over a considerable period of time. The magnesium oxid, which is the secondary product of the reaction is perfectly white, and serves as a background which greatly assists in improving the appearance of the tooth.

I have made but a limited number of experiments with the magnesium peroxid in this way, and then only after the use of sodium peroxid, which I believe to be unequalled as a detergent and bleacher of infected and discolored dentine.—*Cosmos*

CHARACTER AS DEMANDED IN PROFESSIONAL LIFE.

By Forrest G. Eddy, D.M.D., Providence, R.I.

It used to be the practice, and perhaps continues to be, in New England churches, for ministers, when the occasion required, or when matters had for some time been running perhaps too smoothly in the ecclesiastical grooves, to deliver what was known as a "doctrinal sermon,"—one of those terrible appeals which were calculated to arouse the imaginations and the consciences of the most hardened listeners. It was a sort of old-fashioned way of "rounding up" the flock, and of branding anew the straying members with a renewed sense of their obligations and their short comings.

Animated with a somewhat similar zeal for our mutual welfare I shall venture this evening to address you briefly upon a matter which deeply concerns us all as professional brethren, and yet which in the hurry of our practical life is easily lost sight of, however important we inwardly admit it to be.

The dangers of a professional life are, fortunately, not so great as those which beset men concerned with vast commercial ventures of the day, where enormous stakes are played for yet more enormous and unjust gains ; but the danger differs not in kind, but in degree. Mankind, weak, irresolute, roused only at rare intervals to a quickened sense of the responsibilities of the moral life, has nevertheless a sure, instinctive appreciation for what is better than itself. This has lately been seen in the death recently of a "good, great man" in this city, one who did noble work in behalf of Harvard Dental School, whose one unceasing message to his fellow-men was to impel them to live up to the highest ideals. It will never be adequate to the formation of real character to coax ourselves that we are doing fairly well because debts are paid and a conventional rectitude maintained. Not to personal charm or wealth of intellect will men pay the homage alone due to a majestic character. Any attitude seems preferable, morally, to that sublime conceit which recognises no necessity nor possibility of advance. This unhappy condition is well reflected in that prayer uttered some years ago by a preacher well known hereabouts, who petitioned his Creator somewhat as follows: "O Lord, now grant us that self-complacency which is the balm of life."

There is little need for me to speak with special significance upon the necessity for medical men of all specialties to keep themselves above the least taint of professional suspicion. Dr. Oliver Wendell Holmes has again and again dwelt, as he so well knows how to dwell, upon the large, generous, yet exacting ethics of the code, which is as binding upon our department of the profession as upon any.

The more obvious side to this question of character, as it concerns us, is the careful avoidance by the slightest word or act of anything which shall call down reproach upon our calling or upon us as men. I do not mean to inculcate, of course, any weak subservience to the dictates of what is called, by convenience "society,"—that intangible yet forcible consensus of organized humanity which undertakes to say how we shall speak, eat, dress, and behave when in open relations with our fellow beings. Any timorous sacrifice of personal freedom of action, so long as we know ourselves to be right, is no gain in character. Etiquette—a cultivated and well sustained courtesy of manners—is, however, by no means despicable. More often than not it is the evidence and the earnest of higher purposes within. Manners are not of necessity morals, but they are the choice fruits of a sound growth. It is certain that those who are of hypocritical purposes will soonest adopt that which they hope will pass for sincerity, by simulating a smooth and winning external conduct, which is in them more repulsive because the genuine thing is so desirable. "Be and continue poor," said Heinzelmann, "while others around you grow rich by fraud and disloyalty, be without place or power, while others beg their way upward; bear the pain of disappointed hopes, while others gain the accomplishment of theirs by flattery; forego the gracious pressure of the hand for which others cringe and crawl. Wrap yourselves in your own virtue, and seek a friend and your daily bread. If you have in your cause grown gray *without unbleached honor*, bless God and die."

With the gradual advancement of softening influences of civilized life many things once admired have had to make way for others still better. One cherished delusion in particular, I fear, will now have to be given up as superannuated. I refer to the man once esteemed among us, with a "kind heart and rough exterior." We are none of us so young that we do not recall the old-fashioned dentist of infancy, of bluff, cheery ways, whose person and office smelt largely of his stable as well as of his pungent drugs. With all the heartiness and moral soundness of these good men, there is now recognized to have been not a little selfishness in their inconsiderate absence of cleanliness and outward deference to others. Their bluffness often was, to the careful observer of human character, a thin cloak for their abnormal sense of their superior knowledge. They lacked, good fellows as they really were, the consequent modesty of the highest wisdom.

Another thing which has already entered largely into our professional life, and which is certain to become a still more prominent influence, is the rapid change of the relations between men and women of the present day. The now generally observed practise of employment of women assistants in the operating-room of the profession of dentistry we must hold not so much to protect our patients as ourselves. Whenever women co-operate with men in daily life, manners are gentler, courtesy becomes an exchange of mutual consideration. and not a patronising deference of the stronger to the weaker. Women—the best sort of women—now wish to be recognised not as women, but as human beings, and there never was a time when frankness, ingenuousness, and honest of purpose were so well understood. The age of silliness is happily passing in this respect. Dignity, inflexible courtesy to all conditions of age, sex, and of worldly circumstances, are now met with openness and an intelligent appreciation of the motives which underlie outward conduct. Women are quick to see and to approve the spirit of fairness, especially if it be free from all irritating condescension ; but before the ideal condition between patient and dentist can be realized, the latter must have definitely shown himself " from spur to plume a stainless knight," no matter what may be the character the attitude, or the behaviour of those whom we may meet in daily practice. He, at least, must be without fear and without reproach.

Do not for a moment suppose that I am advocating a merely professional manner. Nothing can be more distasteful to those of a delicate preception in morals than the priggish decorum in which the man is wholly merged in the doctor. One must be of poor stuff who does not dare to be himself in any circumstance of life. " Who is that man over there ?" asked one man of another. " His name is Higgenbottom, and he looks like it." It will not do to *look* profession merely. A man is of some consequence in the world when it is known he can be relied upon ; that when he says he will do a thing, he *can* do, and *does* it.

I see one distinct advantage in the possession of a lofty character for those of our avocation, of which it is not easy to speak without exciting, perhaps, derision, and yet, certainly in giving utterance to my thought, I have no wish to provoke even a smile. Doctors, and especially dentists, are frequently made the subjects of many pointless jests as relating to matters financial. Like the lawyer, the doctor and the dentist are often made to feel that the public are fond of regarding themselves as the victims of inconsiderate charges. This is not a pleasant condition to find existing. and yet it undoubtedly does exist, whether as a phase of " American humor " or as a firmly established theory in the popular mind. It seems to me that nothing sooner tends to disarm prejudice of this sort than the awakening conviction of those who resort to us, that a professional man who is honorable in most things is apt to be so in all, and that if he respects himself and his character before men, he will of necessity respect the nature, and hence the value, of his professional services. Perhaps this is a trival matter in your opinion, but at least it is not so to those who approach us for aid. Extortionists and tricksters are responssble for this false estimation in which we are sometimes held, and therefore the more solicitous we are of honor as professional men the more rapidly will the cure operate.

It is said that no member of the callings of medicine and dentistry has ever been elevated to the peerage of England. Many have been knighted, many more have been held in love and veneration, but no one of either profession has ever been offered that prize secretly coveted by every loyal Englishman. The cause is said to lie (though I do not personally know it to be the case) in the deep-rooted prejudice which holds that any one constantly employed in daily contact with frailties and diseases of humanity is in some sort influenced for the worse by a degrading contamination; in other words, the alleviation of bodily ills, while it may render a man worthy of respect and of a limited recognition, makes it impossible at the same time that he shall be ennobled. It is curious yet natural withal, with the rapid democratization of life in England that this feeling is diminishing. Its professional men were never so esteemed, even without its cherished coronets, and, as a logical sequence, they never so much honored themselves or so dignified the callings of dentistry and medicine.

In this country no such unhappy and absurd stigma has ever attached to our position, nor have our opportunities, been stifled by social obstructions. A rare courtesy, a dignified and self-centred control, a delicacy and chastity of soul which is probably a part of the national character, has distinguished our profession here and has given it repute abroad.

In addition to worldly reputation and to the certainty of personal gain, we must carefully insist upon, for ourselves and for our brethren, a loftiness of character which in political and social life we Americans require in others. Scott's last injunction to his son-in-law was, "Lockhart, I may have but a minute to speak to you. My dear, be virtuous, be religious. be a good man. Nothing else will give you any comfort when you come to lie here."—*The International.*

THE OLD AND THE NEW.

In our April issue we expressed the opinion, as the result of an extensive practical experience and observation, that "for all-round dental mechanics, the men and the students whose mechanical dentistry was confined to the precious metals, were far ahead of the present generation." One of our young student friends writes rather a trenchant denial, reminding us of a fact which we neither discussed or denied, that the matriculation to-day is away ahead of that "required a quarter of a century ago." As there was no matriculation required at that time, his argument on that point is unanswerable.

The introduction of vulcanite was the cause of the degeneracy of the laboratory. Competition for cheapness drove gold and platinum out of many laboratories, and brought a lot of inferior men in. Before the use of vulcanite, every student was, by necessity, a metal worker; many of them, by necessity, skilled in continuous gum work. There are too many offices to-day in which a metal plate is rarely, if ever, manufactured, and there are scores of otherwise skilful dentists who are utterly dependent upon skilled mechanics hired by the month, many of whom were taught all they know about metal work by these very workmen. This was not the case before the entrance of vulcanite. The student's daily routine in the laboratory was exclusively in the more complex work of the metals. Much of what is now dignified by the title of "bridge-work," was common in city and town offices, and with a score of difficulties in the way. In every laboratory one found almost the full equipment of the jeweller and the moulder. All dentists made their own solders, and many of the articles now supplied by the depôts. Most of the dentists made and tempered their own excavators, and a great variety of other articles. We have one of the oldest dentists in Quebec, who made all his own porcelain teeth, and still continues to use them. It is all very well to call these old practitioners "old fogies;" so was Allan, so was W. H. Elliott, so, it may be said, is Haskell. But who dare presume to say, that men like the late Dr. Atkinson, Dr. Allport, and a host of others not long passed away—men like Dwinelle, Rich, and their contemporaries, still living—must take a back seat with the noisy braggarts, who forget that these men were most skilful dental mechanics in metal and porcelain work before the braggarts were born.

We are all prone to arrogance and self-opinion in youth, and wonder, perhaps, how the world got on so long without our advice. It would be a useful study to investigate what the octogenarians have done to make dentistry what it is; to place their labors in colleges, in the journals, in our literature, and in actual practice, side by side with that of their juniors. The old couplet will bear repetition:

> "We think our fathers wrong so wise we grow,
> Our wiser sons, no doubt, will think us so."

Editorial Dominion Dental Journal.

TO MAKE ARTICULATING PAPER.

For black paper, use finest lamp black mixed with refined unsalted lard, to which has been added (for flavoring) a few drops of oil of gaultheria. This colored paste is to be thoroughly rubbed into the paper with a piece of white flannel. After enough color has been absorbed, take a piece of *clean white* flannel and rub till all color ceases to come off. "Copying tissue" makes a nice paper for the purpose. If medium tough paper is treated as above it is very useful for making duplicate copies of orders, letters, etc. The sheets of colored paper being placed between sheets of fine linen writing paper, and written on with a hard lead pencil, gives two or three copies at one writing.—*Items.*

MAKING METAL DIES FROM PLASTER MOLDS.

Take the impression and make the plaster model as usual. When the plaster sets, trim and shape it as you want the metal die; cover the model with heavy tinfoil, making a perfectly smooth fit. Now lay the covered model on a piece of glass, tin side up, and cover it all over with plaster, from one-fourth to one inch thick, making it thick on palatine part, and thin on rim; especially if there is a good deal of undercut. When the plaster sets remove the model. If the rim breaks in separating, replace, and back up with new plaster mixed thin. This gives a tin-lined mold for casting in. Put the mold over the kerosine stove, and when hot and dry, pour in the zinc or Babbitt metal. The metal should not be too hot when poured. In putting the tin on the mold, and in separating the model from it, care must be taken not to tear or puncture the tin. Smoke the die, or coat with whiting, and cast the counter as usual.—*American Journal.*

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THE DANGERS OF WEARING ARTIFICIAL DENTURES.

By PROF. DR. KRÖNLEIN, of Zurich.

I SHOULD like to draw your attention to a danger, which at one time or another may threaten those of your patients who are indebted to your skill for the replacement of lost or defective teeth; you know well enough, no one better, how very numerous such people are, how enormously popular artificial dentures have become. I believe one may safely say, that every class of society avails itself of your help in this direction. It has previously been said that the use of spectacles is a sign of our modern civilization, and I believe this dictum could also be extended so as to include the wearing of artificial dentures.

Now it is doubtless owing to the very popularity which these dentures rightly enjoy, that the public are almost unaware of the danger which is incident to their use. And from this we might well conclude that the danger is a small one, but further than this neither you, nor we, medical men, can go; nay! I believe it would be a bad and disastrous thing were we to try and deny this risk. For it is a very real one, and though it may not often present itself, when it does, the danger is so great and threatening that one must look upon the individual as fortunate, who escapes unscathed or even with his life. And what makes the catastrophe the more frightful, is the suddenness with which it usually occurs, stealing in during sleep, and often enough annihilating a healthy life, or at any rate threatening to do so.

The danger, of which I wish to speak to you, is the swallowing of an artificial denture. You are well aware that we include under this heading, the slipping of the denture from its natural place backwards either into the larynx or the pharynx, or what is doubtless still more disastrous, into the œsophagus, where, on account of its nature, hardness, size, of its hooks and bands, the piece is prone to lodge and whence it cannot easily be removed. It is self-evidently almost impossible to say how often this accident occurs, since we possess no useful statistics on the point. I hope, however, to bring forward enough cases to prove to you, not only that the danger exists but that it is a factor we must take into account. My own experience is confined to four cases, in three of which I was able to

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* Translated from the Schweizerische Vierteljahrsschrift für Zahnheilkunde.

save the patient by immediate operative treatment, but in the fourth, I regret to say, that my help came too late, and the patient, a healthy man, succumbed.

A few years ago an honoured colleague of mine, a dental surgeon, in the course of a conversation, expressed to me the opinion, that a well made and fitted denture could not slip out of its place, and that, therefore, a dentist who made a piece according to the recognised rules could safely guarantee that it would remain firm. He said, that the danger did not usually exist, and that for a denture to be swallowed it must either have been defective or have been made on faulty lines. I am not in a position to dispute the point nor form a judgment concerning it, but even if we exclude these, there remain the enormous number of badly made and defective pieces, to anyone of which this accident might happen. On these grounds I do not think that any improved method of construction is likely to wholly eliminate this danger. So long as dentures are worn we must reckon with the carelessness and the poverty of the public, and remember that the risk exists.

It would be well now to consider the circumstances under which a plate, or, more rarely, a full set, can be swallowed and pass either into the larynx or œsophagus. By going through the somewhat numerous list of casualties, and especially if I add to it those cases which have come under my personal observation, it becomes evident that this accident occurs during sleep in the majority of cases. It has happened either to those patients, who have been in the habit of always wearing their teeth during sleep, or to those, who, though in the habit of removing their dentures, have omitted to do so in a thoughtless moment and have had to pay the penalty of their forgetfulness.

Valuable, in this connection, is the experience of a young lady who met with this accident a few years ago. She was a patient of mine and told me, that she always removed her denture before going to sleep, because she usually slept with her mouth open and had noticed that her piece became displaced when she snored. On an unfortunate evening, however, she omitted to remove her piece. As she put it, this was the first and only time, in an hour she awoke with a most acute pain in the neck, and, as the artificial teeth were not in the mouth, she immediately jumped to the conclusion that she had swallowed them. I am also in a position to affirm that the teeth were swallowed during sleep in two other cases, which have come under my own observation, a statement which is verified by the cases recorded in the literature of the subject.

Not only have we to take normal sleep into account, in this connection, but a number of cases have been recorded in which this swallowing of dentures has occured during artificial and also during pathological sleep, *ex. gr.* during chloroform anæsthesia, the mouth not having been examined for artificial teeth and, if present, not removed, also during epileptic or hysterical fits.

But this accident also occurs under other conditions. Instances are known in which during full consciousness the piece has suddenly become loose, has been sucked in and swallowed. A classical example of this we possess in surgical literature, in the observations made and recorded by Dieffenbach, the genial Berlin surgeon. In his "Operative Surgery," Dieffenbach states, that once in Paris, possibly about 1836, he was sitting at table with an old lady, when suddenly the whole of her denture disappeared. The lady had swallowed it, and the patient was indebted for her life to the prompt action of Dieffenbach, who fished it out of the upper portion of the œsophagus with his fingers. This is an instance of the accident occuring during a meal. It may well have been that the piece was a bad one, judged by to-day's standard, on the other hand, there are records taken quite latterly, which show, that a piece may occasionally be loosened, slip down the throat and remain there, during the rapid swallowing of water or of beer, or during a deep yawn. Besides, it may happen with quite a well made plate that a band should break off during eating or sleeping and the plate so become misplaced. I have met with such an instance in my own practise and shall later bring the *corpus delicti* before you. It is therefore apparent that there are many possibilities and opportunities which may lead to the swallowing of an artificial denture, and even the opinion, that this accident cannot happen to a perfect denture, will be of little comfort to you, seeing the number of imperfect ones, which are daily worn. In order to clearly picture to you the presence of this danger and to show you how imminent is the fear of death, it will perhaps be best if I briefly relate to you my own observations. I shall but lightly touch upon the purely surgical side of the question, but I shall picture to you the principal points connected with the occurrence and course of such an accident, so that this experience may make you familiar with the variable chances of such a patient. As I have said, my experience is confined to four cases, but, I may at once say, though this number is absolutely small, it may be called, relatively speaking, large. Few observers have recorded a greater, or indeed, as great a number of cases.

My first case happened to me at Berlin, whilst I conducted the Surgical Poliklinik at that university. The patient, the wife of a tradesman, Marie B., aged 30 years, sought my help on the afternoon of 16th December, 1880, and informed me that she had, about an hour previously, swallowed a small denture. I verified the statement of the patient by an immediate examination with a whalebone-sound, armed with an iron bullet. The foreign body had lodged in the œsophagus, about the level of the upper border of the sternum, just as the patient had stated. Most of these patients are quite correct, not only in the diagnosis of swallowing the denture, but also as to the position in which it has lodged. Of course, there are exceptions, as I shall later illustrate by a case in which a patient considerably erred in both these points, and by these false statements put me to considerable worry. I now endeavoured to extract this denture through the mouth, this being obviously the simplest proceeding, and for this I employed that most useful instrument, Gräfe's coin-catcher. I was successful, at the first attempt, to catch hold of and remove the denture. The denture is small, carrying three teeth, and defective at one point, where, according to the patient, it broke just before it was swallowed. The plate was just the size to gain entrance to the œsophagus, where it stuck fast. Now, certainly fortunate instances do occur, in which foreign bodies of considerable size successfully pass down the gullet; indeed, almost incredible instances are recorded, in which idiots have swallowed table-knives and similar articles, and these have happily passed the whole journey through the œsophagus, stomach, and intestines, and have been passed without trouble on going to stool. But these are exceptions, and can hardly apply to a denture with its bands and corners.* In the above instance the matter was at an end on removal of the piece, the patient left the clinic happy, and there were no further results. This is the only one of my four cases, which was so simply cured. The other three instances, met with here in Zurich, did not run their course in so simple a manner.

The next case I will relate is that of a girl, Amalie B., aged 21 years, who was sent to me on March 1st, 1888, from Bludenz, because she had swallowed her denture in the previous night. It is the case of the lady, who, as I have stated above, was in the habit of sleeping with her mouth open, and had noticed that her piece then became loose, and had, therefore, regularly removed it. But once, on the mentioned night, she forgot to do so, and awoke in about an hour with the most acute pain in her neck and further noticed that her denture was missing ; in fear of death, she became covered with cold perspiration, and had retching attacks, and found herself unable to swallow. From these points she concluded she had swallowed her denture, and hastily summoned medical men, who endeavoured to remove the piece in precisely the same way that I adopted in the previously mentioned case. One of the gentlemen appears, after two attempts, which threatened to choke the patient, to have slightly loosened the piece. Retching again set in and the piece became more firmly fixed than before. The gentlemen were wise enough not to wear out the patient with fruitless attempts, but brought her by the first train direct to Zurich ; so that I had the opportunity of seeing her at one o'clock in the afternoon, about twelve hours after the accident. The patient was prepared for anything, and readily acquiesced in my earnest advice to at once submit to an operation for removal of the piece. So I was able in an hour to operate. I performed external œsophagotomy, as is usual now-a-days, when extraction through the mouth cannot be performed, opening the œsophagus on the side of the neck, and removing the piece through the wound.

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* This has occurred, see case by Dr. Ledlie, "British Journal Dental Science," 1890, p. 481.—Editor.

The operation of œsophagotomy, first performed 155 years ago, was at first looked upon as exceedingly difficult, and probably for this reason has only recently been much used for the purpose of removing foreign bodies from the gullet. The operation is by no means so difficult as was pictured. I have myself performed it on five occasions on account of foreign bodies, three times on account of artificial dentures, once because of sheep's tooth, and once on account of a small pork bone ; only one of these cases died, and this one, indeed, rather in spite of the operation than because of it.

Under an anæsthetic, œsophagotomy was therefore performed on this young lady and the denture removed. The patient recovered in four weeks and she was allowed to return home. A year ago she, I believe, died of diphtheria, which had no connection with the operation. The denture I am able to show you.

My third case occurred five months ago. The patient, the wife of a tradesman of this town, aged 32 years, on December 29th, 1892, had the misfortune to swallow her denture during sleep. For years she had worn this piece day and night, though nothing had ever happened. On this unhappy night she awoke about eleven o'clock, and noticed that the piece was missing. A painful feeling in her chest led her to conclude that her denture had lodged in the œsophagus. The medical man, who was sent for, could but support this diagnosis, and sent her on the following morning to me. She arrived about ten a.m., about eleven hours after the accident. Having satisfied myself of the deep position of the denture, about the middle of the sternum, and feeling perfectly sure that it was useless to attempt to remove the piece through the mouth by means of a coin-catcher, I proceeded to perform œsophagotomy. On account of some catarrh and dyspnœa, the patient could not be thoroughly anæsthetised, but she was exceedingly brave, and kept quite still. The piece was fortunately removed through the wound, and healing followed slowly, but without complication.

So far, you have only heard that a threatened life has each time has been saved, either by extraction through the mouth or by performing œsophagotomy. Unfortunately, things do not always go so smoothly, and I am able to show an extensive preparation taken from a fourth patient, who unfortunately died from complications caused by a denture remaining long in the gullet. The patient knew the piece to be defective, though he still continued to wear it, even at night during sleep. During the night of January 3rd, 1889, the piece slipt during sleep, and the patient awoke at five a.m., to find he had swallowed it. Acute pain in the neck, spitting blood, and inability to swallow did not leave him in doubt on the point. The medical men called in, examined the patient, and now comes a disclosure which is of extreme importance to the surgeon, and one not to be lost sight of. They examined perfectly correctly, using the largest sound, passed it into the œsophagus, to test the statement of patient, but the sound passed without hindrance into the stomach. From this they came to the conclusion that, though the piece was swallowed (the previous evidence would not allow them to doubt this), it had passed into the stomach, at all events it could not remain in the œsophagus. The patient was comforted as far as possible, and a fluid diet prescribed. The patient, however, held to the opinion that the piece was in the œsophagus; the pain in the neck became more acute, and not believing in the first medical men, he went to others. These also were unable to detect the piece in the œsophagus, as the largest sound passed easily into the stomach. So five days passed. On the fifth day the patient suffered from profuse hæmorrhage from the mouth, and soon afterwards per rectum. He vomited bright red blood, and soon began to sink from its loss. Dr. Ziegler, who was now called in, immediately recognised the gravity of the position, and guessed that the piece must remain somewhere in the œsophagus, and held that an operation was indicated. He therefore sent the patient at once to Zurich, thoughtfully accompanying him. This was on the sixth day after the accident, on January 9th. The man looked a picture of misery; on account of the six days starvation, and the great loss of blood, he was a mere skeleton, and of a corpse-like whiteness, whilst his breath smelt abominably. During his journey to Zurich, he had involuntary motions containing coagulated blood: his pulse was frequent and small. Dr. Ziegler and I were not, of course, for a moment in doubt that here was a most serious complication, calling for immediate treatment. An artery must have been damaged, the carotid or even the aorta or other large vessel. The denture must have pushed its way through the œsophagus and have ulcerated into a large vessel. The blood from this vessel would then have been partly evacuated through the mouth, and partly swallowed and passed per rectum. The difficult question now was: Where is the bleeding spot? And also, where has the denture lodged? I carefully examined the patient with the iron-bullet sound, and believed that I could distinguish, by gently moving this, a slight scratching in the neighbourhood of the supra sternal fossa. This was sufficient. At this spot the denture had lodged; here it must have bored its way through the œsophagus and have opened up a large artery.

As there was immediate danger of return of the hæmorrhage, by further manipulation with the sound, I prohibited any further investigation and pointed out to the patient, who was prepared for all emergencies, the immediate need of operation. I at once performed œsophagotomy, and, owing to the weak condition of the patient, without an anaesthetic. The operation was without difficulty and there was no hæmorrhage. There was an interesting point after exposure of the œsophagus on the left side; at one spot one of the porcelain teeth, belonging to the swallowed denture, could be seen peeping through the wall of the gullet. By pressure it bored its way through. After I had sufficiently widened the perforation with a knife, I was able to catch hold of the denture with forceps and to remove it.

The denture, which I have here, was an upper plate with four incisor teeth and curved to correspond to the outline of the gum. If you picture to yourself the position of the denture in the œsophagus, you will understand why the surgeon could not detect it, even after repeated investigation with the thickest sound, passing by it into the stomach. The concavity of the piece looked towards the lumen of the œsophagus and the sound was able to pass through it as through a hollow ring. Noteworthy was it, that nothing could be seen, during the operation, to indicate the source of the previous hæmorrhages. As remarked, there was no bleeding during the operation.

At first the recovery was wonderfully good. The patient felt convalescent, was happy and improved visibly. But four days after the operation, whilst the wound was healing beautifully, my assistant was suddenly called to the patient, who had, so it was said, fearful hæmorrhage from the mouth and had also passed a mass of blood involuntarily per rectum. The patient was nearly unconscious, but recovered gradually, and seemed to have quite passed out of danger. We had no doubt that the source of the hæmorrhage was the same as previously, and that it had no connection with the operation. We were already believing that the case was won, when on the fifteenth day after the operation, a third and last hæmorrhage occurred with quite the same symptoms as previously, and the patient died in a faint. In the meantime the operation wound was as good as healed. Examination, *post mortem*, showed that the hæmorrhage originated from the right inferior thyroid artery (the operation had been carried out, as usual, on the left side). This was certainly due to ulceration caused by the denture, which had perforated the œsophagus. The patient died, therefore, from the denture remaining so long in the gullet, and the misfortune was that the denture was so placed, that the sound passed by it in spite of a correctly made investigation. It was impossible for the consultants to have, in the first instance, correctly diagnosed the position of the swallowed denture.

It is a noteworthy circumstance, in this connection, that during the whole time the patient clung to the opinion that the denture was in the œsophagus, and from this we may learn, how important, under certain circumstances, are the subjective symptoms of the patient in diagnosing the position of a swallowed denture. But this is not always so; now and again these evidences are false and are apt to mislead the surgeon, as you will see from another case that I have met with.

An old invalid one day had an epileptic fit with loss of consciousness. As she recovered she found, that her denture was missing from her mouth, and in mortal fear she declared, to those around her, that she had swallowed the piece during the fit and could distinctly feel it in the upper part of the stomach. When she was sent to me, the same day, she suffered from nausea and pain on swallowing, which she refered to the level of the supra sternal notch and she stated, quite dogmatically, that the piece must have lodged at this point in the œsophagus. I investigated with a sound, and passed this into the stomach, though once I had the impression that there was a certain resistance at the cardiac opening. For me the matter seemed clear, and I remembered distinctly the poor patient from Winterthur and thought I had to do, perhaps, with a similar case. In order to miss no point I sent the companion once more back home with the direction that she should search the room occupied by the epileptic during the fit, and see if the piece had not really fallen down somewhere. Now, notice the result! In about half-an-hour the messenger came triumphantly back with the artificial denture. After much search she had found it right behind a box. During the epileptic seizure the piece had fallen out, and being an experienced nurse the patient knew of the danger of swallowing a denture, and by a sort of auto-suggestion, she experienced, on recovering, the pain as if the denture really had lodged in the œsophagus. If we had not been so careful, we might easily have been led to do a gastrotomy, and, naturally, would have found nothing in the stomach.

Now, I wish briefly to present some statistics from which you see that such accidents are by no means rare.

There is a very thorough and exhaustive work on œsophagotomy, undertaken on account of the swallowing and lodgment of foreign bodies, by George Fischer, of Hannover, a work which contains all material up to the year 1888. With endless care and trouble, Fischer searched through the whole medical literature and also addressed questions to the numerous surgeons, as to whether they knew of any unpublished cases. He was able to collect 108 cases of œsophagotomy during a period of 150 years (1738-1888). Among these 108 cases there are 32 in which the operation was performed on account of the swallowing of artificial dentures. Of course the number 32 does not indicate all the dentures which have been swallowed, but only those which have been removed by œsophagotomy. A certain number can be removed through the mouth. The first artificial denture removed by œsophagotomy was performed by Cock, in 1856.

I have brought these statistics up to date, by adding to them the two new cases, which occurred in my practice, and I have found three other records in the literature since 1888. So that statistics show 37 instances in which œsophagotomy has been performed on account of swallowed artificial dentures. Of these 37 cases, which occurred between 1856 and 1892, therefore, during a period of 37 years, 29 got quite well, while death followed in 8 instances. The mortality was, therefore, 21·6 %, and was chiefly due to the piece remaining long *in situ*. I hope these figures will impress upon you that the danger of wearing plates is not so insignificant that we can afford to ignore it.

I should, therefore, like to close this article with the following warning, which I hope will reach, through you, those who wear artificial dentures.

As experience sufficiently proves that artificial dentures are prone to loosen and be swallowed during sleep, an accident of great danger to life, and one having caused several fatalities, so every one who wears a denture should be most earnestly advised to regularly remove this from the mouth before going to sleep. This warning applies to every artificial denture of whatever size or construction, for no guarantee can be given that a piece will never loosen in sleep, even if constructed on the most modern principles.

Badly made and worn out pieces are more prone to loosen and be swallowed, and this untoward accident may even occur whilst the wearer is awake; during eating, drinking, yawning, etc. The wearers of teeth should take this well to heart, and abandon the defective and badly made dentures having them replaced by better.

If medical men and dentists more consistently and emphatically impressed this point on the public, lasting results might follow. A result nothing short of guarding a healthy life from a miserable and painful death.

THE DENTAL RECORD, LONDON: SEPT. 1, 1893

OUR CURRICULUM.

To those of us, at home, who know well the really limited knowledge required to pass the preliminary examinations qualifying for registration as a dental or medical student, there can be nothing more amusing than to notice the somewhat exalted notions held by our transatlantic cousins as to this test. What does it really amount to? Simply this. That any boy of average capacity kept at school for the ordinary period, say till he is sixteen years of age, is able to pass the test with little effort. The whole reason for such a test is to ensure this preliminary education. How can a boy without such elementary knowledge rightly appreciate his future scientific studies, to say nothing of taking his proper place in a civilized community? To look upon such an education as anything but preparatory to future special work is as absurd as it is to assume that an Oxford or Cambridge degree is obligatory. Although it is possible that a mechanician, and perhaps ideal dentist, might, now and again, find the test a barrier to his most evident vocation in life, it must be obvious, from what we have said, that it is a barrier of the flimsiest kind, and one he can easily surmount. Moreover, it is a recognised principle that laws and regulations always impose some hardships in special instances, though they are of the greatest blessing to the community. A wise parent noting the bent of mind of his boy, and educating him for his proper sphere in life, would have prepared him for this test, and so have removed the barrier. The action of the regulation, therefore, in the majority of instances, is to reinforce the moral obligation of a parent to educate his child.

We would now like to put another question. How can such a preliminary training, which usually is complete, as far as it is obligatory, when the boy is about sixteen years of age, be held to interfere with his practical training for dental work? It cannot do so. The boy then enters a workroom, and for three years devotes himself to purely mechanical training, devoting his spare time, if he be wise, to intellectual and other pursuits, which ensure his participating in what Sir John Lubbock calls, "The pleasures of life" The mechanical training o'er, he comes to the more special part of his work, with his fingers and his mind fitted to benefit by the educational influences with which he is now surrounded. At the dental schools he has a superabundance of material and opportunities for practice, whilst at the general hospital he sees the whole field of human disease. So he should learn his practical and his theoretical work hand in hand. Reading the difficulties of dental by the lamp of general pathology, and not go floundering along that unscientific line of thought which sees in tooth disease something unique, isolated, *sui generis*. We are only concerned now to show that the student's curriculum is practical with theory as a hand-maiden; to point out to the student that his curriculum, if conscientiously followed, will qualify him for his future professional life. Curricula do not qualify men, they but allow men to qualify themselves. Fools and laggards will remain fools and laggards, but those who are wise and industrious have mapped out for them a course of study, which has been shaped out of the experiences of those gone before.

Notes and News.

LOOKING for the starting point of the previously expressed ideas, we find them in a couple of editorials apropos of the recent action of the Medical Council. It is extremely satisfactory to find that this action meets with approval from those more immediately concerned—the Americans. Both the opinions of the *International* and *Cosmos* seem to coincide in this, though the ground of their approval is rather the unfairness of distinguishing between the American colleges than any admission of superiority in our educational methods. This is of course perfectly as it should be, for if either country does not regard their plan as the best, it would be almost criminal not to alter it, nor does this preclude an argumentative warfare, provided it be conducted in a fair and friendly manner. There is no room for bitterness, though we own to have met with it both at home, from those who do not distinguish between the roguery carried on over here under the term American, and that which the name implies, in its best and truest aspect; and we also regret to find a tinge reflected in the *Cosmos*.

But, perhaps, we are wrong in regard to the *Cosmos*, things sometimes read worse than the writer intends, and we certainly would forgive it a great deal for the delightful expression of opinion that "Dentists, like poets, are born, not made." If Dame Nature would but label her offsprings, according to their destiny, what a deal of trouble we should be spared. On this ground we must hold that "the superiority of American dental methods, both educational and practical," which "we have been so long accustomed to hearing about and believing in," is a sort of product of the soil like the buffalo of the plains or the prairie dog.

"Hearing about" first, and "believing in" second, is also good. Here we have cause and effect. There is no doubt "the hearing." "Wolf! wolf!!" has been called so often, that really we are tired of running out to see if there be a "wolf." It is all very well to hear praises sung by a second person, but when the individual concerned is found blowing his own trumpet, as if he would crack the heavens, it gets a little bit sickening. Doesn't it? Perhaps if our dental brother Jonathan would but join the "Conspiracy of silence" we might even take to singing his praises ourselves. One never knows, but at present our time is so much taken up with listening to his assertions, that we positively have none left to take notes of his deeds.

The Medical Congress at Rome has been postponed till April, 1894. This step has been taken on account of the prevalence of cholera which will oblige so many practitioners of medicine to remain at their post. The rumour that it would be posponed has been current for some time but has always been denied. The official notification was published on August 3rd.

The Royal College of Surgeons of Ireland have resolved not to insist upon the three years' mechanical course as a part of their curriculum for the L.D.S. As will be seen on our educational pages they simply recommend that three years should be so spent. As a matter of fact they have not the power to alter the requirements in this way. Three years so spent is required by the Medical Council to qualify a diploma for registration. Consequently, a diploma not testifying to this point, ceases to be eligible as a qualification for registration, and so there ceases to be much use in its possession. It only remains for the Council to remove it from their list, and this we hope they will do.

The course of Lectures on Operative Dental Surgery at the National Dental Hospital, which are intended for advanced students and young practitioners, will begin on Monday, October 9th, at 6.30 p.m., by an introductionary lecture on "Operative Dentistry at the Chicago Dental Congress." The special subjects to be discussed by Mr. George Cunningham in this years' course of lectures will include:—(1.) The Morphology of the Dental Arches as Affecting Methods of Treatment. (2.) The Practical Application of Bacteriological Research in the Treatment of the Mouth and Teeth. (3.) Immediate Root Filling. (4.) Restoration of Extremely Decayed Teeth with Amalgam in conjunction with a Matrix. (5.) Crown, Bar, and Bridge-Work, with Illustrative Cases. Each lecture occupies about an hour and a half, every Monday till Christmas.

Dr. Weil, of Munich, proposes in the Monatsschrift to classify joined teeth as follows :—

1. *Simple Coalescence.*—Two adjoining regular teeth or a regular and a supernumerary one, or, in very rare cases, two supernumerary teeth may grow together by their crowns, as their enamel-organs unite, or by their roots through the cementum, or through both materials by crowns and roots, but each *has its own pulp-chamber.*

2. *Fusion of Teeth.*—The same kinds of teeth growing together through the uniting of two tooth-germs, and the teeth having *one common pulp chamber.*

3. *Twin Teeth.*—A regular tooth fused together with its supernumerary neighbour of *the same kind*, or what has never been observed, if *two supernumerary teeth of regular shape and size* uniting and having one common pulp-chamber.

Dr. Kirk proposes to use thin asbestos felt as a vehicle to soak in nitrate of silver to place in a carious cavity to allay the sensitiveness of the dentine. This is preferable to any vegetable substance as not only does the nitrate of silver destroy this, but it is itself decomposed in the action. The asbestos should be heated to redness to destroy any organic matter it may contain.

During the July sittings of the Examiners, of the Royal College of Surgeons, Edinburgh, the following candidates passed the First Professional Examination for the Licence in Dental Surgery:—Lilian Murray (London), James Coltman (Newcastle-on-Tyne), Thomas Roger Haggarty (Newcastle-on-Tyne), Theodore Stancombe Rendell (Torquay), Arthur Heron (Edinburgh), and Thomas Saunders Robertson (Kirkcaldy); and the following candidates passed the Final Examination and were admitted L.D.S. Edinburgh; George James Goldie (Portobello), Henry Theodore Dreschfeld (Manchester), Francis Herbert Hallen (Calcutta), Charles John Luya (Liverpool), George Arnold Wood (Dumfries), Daniel Walter Parsons (Liverpool), Joseph Vincent Coogan (Seville), Alexander Henderson Bain (Galashiels), Henry Perkin (Dewsbury, Yorkshire), and Claude Henry Ashford (Plymouth).

ANOTHER ACTION FOR MALPRAXIS HAS BEEN BROUGHT AGAINST A DENTIST.—In this case a married woman living in a Northern town brought an action against a dentist for recklessly pulling out all the teeth in her upper jaw. Counsel, for the plaintiff, said the defendant stated, that he pulled the plaintiff's teeth out with her consent, and that she was suffering from diseases of the teeth, therefore he performed the operation, and that it was a proper operation to perform. The plaintiff was about 32 years of age, and evidence was given that her teeth were, to all appearances, not only sound, but more than usually pretty. She had never suffered from any pain in the teeth, except just before she went to the dentist, when she was suffering pain from one tooth. Her husband consented to her going to see a dentist, and he went to consult a friend in the town in question as to what dentist she should go to. The friend recommended her to a dentist, but she seeing the word "dentist" on a door-plate went by inadvertence to the wrong dentist and rang at the defendant's door bell. She told the person who answered the ring that she had come to have a tooth taken out. She was taken into a room and the defendant came to her and examined her teeth. She told him she was suffering from toothache, and pointed out at the back of her head the tooth which, in her opinion, was giving her annoyance. The defendant looked at the tooth, and said that it was not that tooth that was giving her pain, and further said she had three other decayed teeth in her upper jaw. He asked if he should take them all out. She replied "No, they never caused me any inconvenience, and I don't want to have them out." He put her under the influence of gas, and when she came to herself she looked on the floor, and to her astonishment, saw that every tooth had been extracted from her upper jaw. When the defendant's attention was called to the matter he said, "Oh, you will be better when you get a new set in." The defendant in reply to his counsel, said that he had been in practice seventeen years, and he was visited by the plaintiff at his house. The Plaintiff informed him that she wanted some teeth out. He examined her mouth and told her that all her upper teeth must come out. He noticed that there were five stumps. He left the plaintiff for some time in order that she might decide if she would have the teeth out, and on his return she said "I will have them out." She also said that if it would save her pain she would have gas. While under gas he took out eight or nine teeth, and after she had come round he, with her consent, extracted several more. After several expert witnesses were called and stated that the course the defendant had adopted was a proper one, and Counsel had addressed the jury, the jury found for the plaintiff with damages £40.

When an incisor is fractured at the tip, and the lost portion does not exceed a third of the length of the crown, Dr. Essig proposes, in the *Cosmos*, to lengthen the damaged tooth by pulling it slowly down into the line. Caps are made for the adjacent teeth, and a bar soldered across between the cutting edges ; a screw through the centre of this joins a collar round the fractured tooth. By daily slightly turning the screw, Dr. Essig brought such a tooth down into line in three weeks. The fixture remained as a retaining piece for some time.

The reports to hand, of the first few days of the Congress at Chicago, are too meagre to be able to record much that is of interest. On the first day, August 14th, speeches of welcome and responses held the field together with the usual preliminary proceedings. On Tuesday, August 15th, Dr. Zsigmondy, of Vienna, read a paper on "Congenital Defects of Enamel." Some of the sections also got to work, papers being read, and clinics occupied the afternoon.

BIRDS OF A FEATHER, ALL FLOCK TOGETHER."—The following are cut from the same issue of the *Lancet:*

"TO THOSE ABOUT TO CONSULT A DENTIST.

"It should not be supposed that a dentist who does not advertise is behind the times. The public should bear in mind that a fully qualified and educated Dentist is not allowed to attract business by such unbecoming and unprofessional methods as public advertisements, the exhibition of show cases, or by the inducement of 'low fees,' one and all humiliating methods and affording no criterion of personal skill, which must be a professional man's best advertisement. The public should know that the man who advertises is usually one whose ignorance is so great that he cannot trust to merit and respectability in order to obtain public patronage, so he resorts to pretension and puffing advertisements, and the public in consulting such a man quickly find their mistake. To avoid falling into the hands of these miserable pretenders, who are bringing discredit upon an honourable profession, consult only such as possess the Licence in Dental Surgery of the Royal College of Surgeons (L.D.S.R.C.S.), the only Government guarantee of proficiency."

This sagacious and high-toned piece of advice is taken from a circular the production of a gentleman who says (on the reverse of the same circular !) that "after many years of unremitting industry and professional experience, both in Hospital and Private Practice," he "has attained to a position in the front rank of the Dental profession. He holds the highest dental qualification obtainable in the world, and in his practice combines the methods of the various schools of Dental Surgery." We need make no comment, but we may inform the Royal College of Surgeons of Ireland that, as we gather from the Dental Register, they are the bestowers of "the highest Dental qualification obtainable in the world," and we may perhaps add that the circular of this Admiral Crichton of dentists was found in a letter-box in the West-end of London, the envelope (with the writer's card enclosed) bearing the superscription, "The Cook Housekeeper !"

WANTED: A "COVER" AND "A GOOD OPERATING SURGEON" FOR £40 A YEAR.

The following letter has been forwarded to us for reproduction *minus* certain particulars for obvious reasons. It is very instructive and very *cool*:

"DEAR SIR,—I want you to put me in communication at once with a well-qualified and registered man who will come down and supervene a practice for me until I am qualified. He must be single and a total abstainer. There will not be much work for him to do, as I can do it, but must have a qualified man in charge. I offer him a comfortable home, plenty of time to himself, but only a small salary—say, £40 or £50 per year—and a prospect of partnership if we agree. This is a splendid chance and plenty of money to be earned, as I have *no rivals worth speaking of here.* If he is a good operating surgeon so much the better, or if he has the M.D. degree, as no practitioner near here has it. I must have someone at once, so they must either wire or write, stating full particulars, references, &c.,
I am,
Yours faithfully, "——."

"P.S.—Of course it is needless for me to say this is in strict confidence, and they must not come down until they hear from me."

Journalistic Selections and Abstracts.

CLEFT PALATE.

By Dr. Ottolengui.

A word on the subject of the soft palate, or velum. Many of the objections which have been urged are well founded. The soft rubber palate is often nasty, and frequently not durable ; but I have observed that, like other things, it is nasty in the mouths of nasty people, whilst it may be quite clean in the mouths of the cleanly. The shortest duration for one I find to be six months ; and as the cost is five dollars for each duplicate, which is about the charge for a pair of shoes which lasts no longer, it becomes a question whether it is not worth as much to talk well as to walk well. But I know one patient who has worn a palate continuously for ten years without needing a duplicate, whilst many last from two to five years.

After a person who is afflicted with *congenital* cleft palate has learned to speak with a velum, a hard rubber obturator may be substituted, and will serve all purposes. This, I may say parenthetically, explains why some dentists have given patients obturators in place of soft palates which they had previously worn, and then have unctuously reported that the patients "liked the obturators best." All the greater difficulties had been overcome by using the flexible instrument.

Looking into the fauces of these patients, the sides of the divided palate hang inactive. Let the patient attempt to swallow, and the sides approach each other. The velum allows this play, and encourages it, so that in time a greater activity of the muscles may permit the sides to approach even closer together. An obturator simply plugs up the hole, and it is evident that the fissure would never lessen with such an instrument in place. Place an obturator in the mouth of a child, and in five years there would be a space all around the bulb, because the development of the child had naturally enlarged the cleft. But insert a soft palate, and the play permitted to the muscles will increase their mobility, so that the tendency towards enlargement, through development of the child, would be counterbalanced by the development of muscular activity, the cleft remaining as small as in the first instance. In proof of this assertion, I may state that a velum made for a child two years ago fits her to-day, and if any change is ever made, it will be to decrease the size of the flaps, to allow more play of the muscles.

As to staphylorrhaphy, the same rule holds. The earlier the operation is performed the better the result that may be hoped for.

There is a child who was brought to Dr. Kingsley at the age of three and a half years. The operation of staphylorrhaphy had been performed with exceptional success. Unfortunately, the anterior part re-opened, but the posterior was so good that it seemed fair to give the child a chance to encourage the growth of the soft palate by inserting on obturator to close the opening in the hard. A little instrument was made for her,—a platinum clasp-plate carrying hard rubber, and the usual course of instruction resulted in a marked improvement in speech. I hope that by this means the closed natural palate will acquire length and strength to perform its function.

The hard rubber fitted over the opening and was held by the platinum plate. If the plastic operation had been a little more successful, and had closed the whole fissure, the child might have had a complete restoration, which would be due to the early operation.

Since making the above remarks, I have again seen the little patient for whom the obturator was made, and the present condition is interesting, as entirely refuting my hope in favour of staphylorrhaphy. When first seen, the posterior edge presented merely as a divided uvula, but with the development of the child during the three years which have elapsed, what was then seemingly a split uvula is *now a distinct cleft palate*, though of course smaller than it would have been had no operation been attempted. Nevertheless, it will necessitate the construction of a velum before perfect speech can be attained, so that the operation *which looked so much like a success three years ago must now be counted as a failure*, although there has been no tearing away of any of the cicatricial tissues. Another point of extreme interest is, that where the obturator was placed to cover the opening in the hard palate, the soft tissue along the edges of the fissure have grown so that they now nearly touch, and it is my belief that that opening could be easily closed by operation. This would be a benefit in simplifying the instrument needed and materially altering the tendency towards nasal resonance.

THE ANTISEPTIC ACTION OF TOBACCO.

As to the antiseptic action of tobacco, Professor Tassinarini, in Rome, calls attention to the fact that as far back as the seventeenth and eighteenth centuries, the use of tobacco was recommended by many physicians as a prophylactic in times of epidemics. In 1842 Professor Ruef, in Strasburg, it is said, stated that all the working-men employed in the Royal Tobacco Manufactory had remained exempt from contagious diseases. Racholier made the same observations in 1883, and Walter Cock, of Texas, in 1889, even recommended tobacco smoking as a preventive against tuberculosis. Dr. Vassili, of Naples, in 1888, experimented on a balloon in which a layer of gelatine was sprinkled with comma baccili. As soon as the smoke from one to four cigars, according to to the intensity of the tobacco, was introduced into the balloon, the micro-organisms of the gelatine were completely killed. These various experiments were imitated by Tassinari, and he found that by tobacco smoke the comma bacilli, the bacilli of pest and of pneumonia are destroyed, or, at least, arrested in their development. In these experiments it was observed that the bacilli of cholera and of pneumonia were destroyed within a few minutes, while the bacillus of pest offered more resistance, and while the bacillus of typhus was scarcely interfered with. Tassarini also affirms that smoking delays caries of the teeth.—*Ohio Journal.*

IMITATION OF GOLD.

One of the most perfect forms is obtained by the following process:—100 parts by weight are taken of pure copper, 14 parts of tin or zinc, 6 of magnesia, 58 of sal ammoniac, 18 of quicklime, and 9 of cream of tartar. The copper is melted, and to this are successively and gradually added the magnesia, sal ammoniac, quicklime, and cream of tartar, each by itself in the form of powder; the whole is stirred for half-an-hour, the zinc or tin being added in small pieces, and stirring is resumed and continued till the whole is melted, the crucible then being covered and the mixture kept in a molten condition for the period of thirty-five minutes. After this, the dross is carefully and entirely removed, and the metal is poured into moulds. The substance thus produced has a fine grain, is malleable, and does not easily tarnish.—*Ohio Journal.*

A CASE OF "SPIRIT RAPPING" EXPLAINED.

Professor Schiff interested and amused the members of the French Association for the Advancement of the Sciences recently by telling them of a patient he had been asked to visit who presented the extraordinary phenomenon of emitting "spirit raps" whilst lying perfectly motionless in a condition of profound lethargy. The patient was a young girl, whom he found lying in bed in the state described, and after waiting a few minutes, very distinct raps were heard, like taps at a door, apparently proceeding from the bed. An examination showed, however, that there could be no concealed mechanism, and Professor Schiff came to the conclusion that, though there was no motion perceptible through the bedclothes, yet that it was the patient herself who produced the sounds. On thinking the matter over, he remembered a resemblance in the sounds to those produced by striking a tense string, and the idea suggested itself that the tendon of the peroneus ongus, if put on the stretch, might be "twanged" by moving it over the small prominences separating the sheaths behind the external malleolus. He made a number of experiments, at first with his great toe resting against a wall, and afterwards without any support, and found that he could at will produce "spirit rapping" of so distinct a character that he played the "Marseillaise" to a large circle of medical admirers, sitting in their midst and moving his foot so slightly that his action could not be perceived. We are under the impression, however, that this ingenious explanation of some cases of so-called "spirit-rapping" is not original.—*Lancet.*

PRESERVING TOOLS.

A good plan for preserving tools from rusting is the simple preparation employed by Professor Olmstead, of Yale College, for the preservation of scientific apparatus, and which he long ago published for the general good, declining to have it patented. It is made by the slow melting together of six or eight parts of lard to one of rosin, stirring till cool. This remains semi-fluid, ready for use, the rosin preventing rancidity, and supplies an air-tight film. Rubbed on a bright surface ever so thinly, it protects and preserves the polish effectually, and it can be wiped off nearly clean, if ever desired, as from a knife blade; or it may be thinned with coal oil and benzin.—*Items.*

STUDENTS' SUPPLEMENT.

REGISTRATION OF DENTAL STUDENTS.

The registration of dental students shall be carried on at the Medical Council Office, 299, Oxford Street, W.

Every dental student shall be registered in the manner hereinafter prescribed by the General Medical Council.

No dental student shall be registered until he has passed a preliminary examination, as required by the general Medical Council,* and has produced evidence that he has commenced medical study.

The commencement of the course of professional study recognised by any of the qualifying bodies shall not be reckoned as dating earlier than fifteen days before the date of registration.

Students who commenced their professional education by apprenticeship to dentists entitled to be be registered, or by attendance upon profesional lectures, before July 22nd, 1878 (when dental education became compulsory, shall not be required to produce evidence of having passed a preliminary education.

Candidates for a diploma in dental surgery shall produce certificates of having been engaged during four years in professional studies, and of having received three years' instruction in mechanical dentistry from a registered practitioner.

One year's *bona fide* apprenticeship with a registered dental practitioner, after being registered as a dental student, may be counted as one of the four years of professional study.

The three years of instruction in mechanical dentistry, or any part of them, may be taken by the dental student either before or after his registration as a student; but no year of such mechanical instruction shall be counted as one of the four years of professional study unless taken after registration,

Forms of registration may be obtained at the office of the General Medical Council. No fee is required for registration as a student.

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* Exception may be made in the case of a student from any Indian, Colonial, or foreign university or college, who shall have passed the matriculation or other equivalent examination of his university or college, provided such examination fairly represents a standard of general education equivalent to that required in this country.

RESOLUTIONS OF THE GENERAL MEDICAL COUNCIL IN REGARD TO THE REGISTRATION OF MEDICAL AND DENTAL STUDENTS.

Preliminary Examination.

1 Subject to such exceptions as the Council may from time to time allow, every Dental student shall, at the commencement of his studentship, be registered in the manner and under the conditions prescribed by the *Standing Resolutions* of the Council.

2. No person shall be allowed to be registered as a medical student unless he shall have previously passed a preliminary Examination in the subjects of general education as hereinafter provided.

3. It shall be delegated to the educational-committee to prepare and issue, from time to time, a list of examining bodies whose examinations fulfil the conditions of the medical council as regards general education.

4. Testimonials of proficiency granted by educational bodies, according to the subjoined list shall be accepted; the council reserving the right to add to or take from the list.

5. A degree in arts of any university of the United Kingdom, or of the Colonies, or of such other universities as may be specially recognized from time to time by the medical council, shall be considered a sufficient testimonial of proficiency.

LIST OF EXAMINING BODIES WHOSE EXAMINATIONS IN GENERAL EDUCATION ARE RECOGNIZED BY THE MEDICAL COUNCIL AS QUALIFYING FOR REGISTRATION AS MEDICAL OR DENTAL STUDENT.

⁂ The Examinations in Divisions I, II, III, at present entitle to Registration on production of satisfactory evidence that the applicant has passed them.

I.—UNIVERSITIES IN THE UNITED KINGDOM.

University of Oxford.—(1) Junior Local Examinations; Certificate to include Latin and Mathematics, and also one of these optional subjects (Greek, French, German). (2) Senior Local Examinations; Certificate to include Latin and Mathematics. (3) Responsions. (4) Moderations. (5) Examination for a Degree in Arts.

University of Cambridge.—(6) Junior Local Examinations; Certificate to include Latin and Mathematics, and also one of these optional subjects (Greek, French, German). (7) Senior Local Examinations; Certificate to include Latin and Mathematics. (8) Higher Local Examinations. (9) Previous Examination. (10) Examination for a Degree in Arts.

University of Durham.—(11) Examination for Certificate of Proficiency. (12) Examination for students at the end of their first year. (13) Examination for a Degree in Arts.

University of London.—(14) Matriculation Examination. (15) Preliminary Scientific (M.B.) Examination. (16) Examination for a Degree in Arts or Science.

Victoria University.—(17) Preliminary Examination; Latin to be one of the subjects. (18) Entrance Examination in Arts, to include all the subjects required.

University of Edinburgh.—(19) Local Examinations (Junior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of these optional subjects (Greek, French, German). (20) Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of those optional subjects (Greek, French, German). (21) Preliminary Examination for Graduation in Science or Medicine and Surgery. (22) Examination for a Degree in Arts.

University of Aberdeen.—(23) Local Examinations (Junior Certificate); Certificate to include all the subjects required. (24) Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of these optional subjects (Greek, French, German). (25) Preliminary Examination for Graduation in Medicine and Surgery. (26) Examination for a Degree in Arts.

University of Glasgow.—(27) Local Examinations (Junior Certificate); Certificate to include all the subjects required. (28) Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of these optional subjects (Greek, French, German). (29) Preliminary Examination for Graduation in Medicine and Surgery. (30) Examination for a Degree in Arts.

University of St. Andrews.—(31) Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of these optional subjects (Greek, French, German). (32) Local Examinations (Junior Certificate), to include all the the subjects required. (33) Preliminary Examination for Graduation in Medicine and Surgery. (34) Examination for a Degree in Arts.

University of Dublin.—(35) Public Entrance Examination. (36) General Examination at end of Senior Freshman year. (37) Examination for a Degree in Arts.

Royal University of Ireland.—(38) Matriculation Examination.

Oxford and Cambridge Schools' Examination Board.—(39) Certificate, to include the following subjects, an adequate knowledge of English Grammer and Orthography, as shown in the course of the Examination, to the satisfaction of the Examiners, being held as conforming to the requirements of the Medical Council in regard to those subjects. (*a*) Arithmetic, including Vulgar and Decimal Fractions; (*b*) Algebra, including Simple Equations; (*c*) Geometry, including the subjects of the first three books of Euclid; (*a*) Latin, including translation and Grammer; (*e*) also one of these optional subjects, Greek, or any Modern Language, or Logic.

II.—OTHER BODIES NAMED IN SHEDULE (A) TO THE *Medical Act.*

* *Apothecaries' Society of London.*—(40) Examination in Arts.

† *Royal College of Physicians and Surgeons of Edinburgh.*—(41) Preliminary (combined) Examination in General Education.

† *Faculty of Physicians and Surgeons of Glasgow.*—(42) Preliminary Examination in General Education.

* *Royal College of Physicians and Surgeons of Ireland.*—(43) Preliminary Examination; Certificate to include Mathematics.

III.—EXAMINING BODIES, IN THE UNITED KINGDOM NOT INCLUDED IN SCHEDULE (A) TO THE *Medical Act* (1858).

College of Preceptors.—(44) Examination for a First Class Certificate, or Second Class Certificate of First or Second Division, Algebra, Geometry, Latin, and either a modern language, or Greek, or Logic, having been taken. (45) Preliminary Examination for Medical Students.

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* "The Council has recommended that these Examinations be discontinued."

† These Examinations are conducted by the Educational Institute of Scotland (No. 49).

Intermediate Education Board of Ireland.—(46) Junior Grade Examination ; (47) Middle Grade Examination ; (48) Senior Grade Examination ; Certificate in each case to include all the subjects required.

Educational Institute of Scotland.—(49) Preliminary Medical Examination.

Scotch Education Department.—(50) Leaving Certificates in each Grade and in Honours.

IV.—Indian, Colonial, and Foreign Universities and Colleges.

University of Calcutta.—(51) Entrance Examination.

University of Madras.—(52) First Examination in Arts.

University of Bombay.—(53) Entrance Examination.

Ceylon Medical College. — (54) Preliminary Examination (Primary Class).

University of M'Gill College, Montreal.—(55) Matriculation Examination.

University of Bishop's College, Montreal.—(56) Matriculation Examination.

University of Toronto.—(57) Matriculation Examination.

University of Trinity College, Toronto.—(58) Matriculation Examination.

University of Queen's College, Kingston.—(59) Matriculation Examination.

University of Victoria College, Upper Canada.—(60) Certificate of Full Matriculation in Arts; or Second Class Provincial Certificate from Education Department.

College of Physicians and Surgeons of Ontario.—(61) Preliminary Examination.

Western University of Ontario.—(62) Entrance Examination in Medicine.

University of Manitoba.—(63) Previous Examination.

University of Fredericton, New Brunswick.—(64) Matriculation Examination.

University of Mount Allison College, New Brunswick, Canada.—(65) Examination for a Degree in Arts.

University of King's College, Nova Scotia. —(66) Matriculation Examination. (67) Responsions.

University of Halifax, Nova Scotia. —(68) Matriculation Examination.

Dalhousie College and University, Halifax, Nova Scotia.—(69) Matriculation and Sessional Examinations.

Provincial Medical Board of Nova Scotia—(70) Matriculation Examination.

University of Melbourne.—(71) Matriculation Examination.

University of Sydney.—(72 Entrance Examination for Medical Students.

University of Adelaide.—(73) Senior Public Examination. (74) Junior Public Examination.

University of Tasmania.—(75) Senior Public Examination.

University of the Cape of Good Hope.—(76) Matriculation Examination. (77) Examination for a degree in Arts.

University of Otago.—(78) Preliminary Examination.

University of New Zealand. — (79) Preliminary Medical Examination.

Christ's College, Canterbury, New Zealand.—(80) Voluntary Examinations ; Certificate to include all subjects required.

Codrington College, Barbadoes.—(81) English Certificate for Students of two years' standing, and Latin Certificate or "Testamur."

Germany and other Continental Countries.—(82) Gymnasial Abiturienten-Examen, and other corresponding Entrance Examinations to the Universities.

Egyptian Government.—(83) Secondary Education Certificate, Arabic being accepted as a classic Language in place of Latin.

⁂ *(a)* The Certificates from the Bodies in the foregoing Section (iv.) must contain evidence that the Examination passed included all the subjects required by the General Medical Council.

(b) In the case of Natives of India or other oriental countries whose vernacular is other than English, an Examination in a classic oriental language may be accepted instead of an Examination in Latin.

(c) The list of Examinations at present received as fulfilling the conditions of the Council as regards Preliminary Education will be revised by the Education-Committee, on returns to be obtained by the Registrar by the end of the year 1893, so as to include only those the standard of Examination of which, in the specified subjects of Preliminary Examination, comes up to the standard considered desirable by the Council.

Regulations of the Various Examining Bodies for the Diploma in Dental Surgery (L.D.S.).

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
1—Preliminary Examination	Compulsory on all who commenced their Professional Education after July, 22nd, 1878. Must be registered as a Dental Student at the office of the General Medical Council, 299, Oxford St., London, W.	Compulsory on all who commence their Professional Education after August 1st, 1878. This differs slightly from that required by the English College. Must be duly registered.	Compulsory on all, except those who have passed one equivalent examination. Must be duly registered.	Compulsory on all who commenced the Professional Education after August 1st, 1878. Must be duly registered.
2—Age at which the Candidate may present himself	Twenty-one.	Twenty-one.	Any age, but diploma cannot be granted until he is twenty-one.	Twenty-one.
3—Duration of Professional Education ...	Four years subsequent to registration,	Four years. *** For students commencing after October, 1890. (3.)	Forty-five months.	Four years.
4—Courses of Lectures, &c., to be attended at a recognised School:—				
Anatomy	A Course of Lectures during not less than six months or one Winter Session...	One Winter Course. (Six months.)	One Course.	One Winter Session.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
Physiology	One Course. (Six months.)	Six months.	One Course.	One Six months' Course.
Practical Physiology (separate from above)	Three months' Course.		One Course.	
Chemistry	Instruction in, which must include Practical Chemistry and Physics.	Ditto (held to embody Metallurgy).	One Winter Course.	Ditto.
Practical Chemistry		Three months.	One Summer or Winter Course (including Metallurgy).	Three months (includes Metallurgy).
a Medica	Instructions in Chemistry, Practical Chemistry and Materia Medica need not be taken in the general hospital and may be taken before registration. *** Attendance at Class Examinations obligatory.	Three months.		Ditto.
Dissections and Practical Anatomy	Twelve months.	One Course of Twelve months (Practical Anatomy).	Two Courses (one of Dissections and Demonstrations, and one of Practical Anatomy.	Twelve months (Dissections).
Metallurgy	One Course.		One Course.	One Course.
Course of Lectures on Surgery	Six months, or one Winter Session.	One Course.	One Course.	One Course.
One Course of Lectures on Medicine	Six months, or one Winter Session.	One Course.		One Course.
Practice of Surgery, and Clinical Lectures	Two Winter Sessions.	Six months (at a recognised Hospital.	Nine months.	Twenty-four Lectures

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
Dental Anatomy and Physiology, Human and comparative	Two Courses.	One Course.	One Course.	Twenty-four Lectures.
Dental Surgery & Pathology	Two Courses.	One Course.	One Course.	Twenty Lectures.
Dental Mechanics	Two Courses. ⁂ Attendance at Class Examinations obligatory.	One Course.	One Course.	Twelve Lectures or Demonstrations.
Practical Instruction in Mechanical Dentistry ...	Three years under the instruction of a competent Practitioner, or under the direction of the Superintendent of the Mechanical Department of a recognised Dental Hospital, where the arrangements for teaching Mechanical Dentistry are satisfactory to the Board of Examiners in Dental Surgery. In the cases of qualified Surgeons evidence of a period of not less than two instead of three years of such instruction will be sufficient. This instruction may be taken prior to the Date of Registration as a Dental Student.	Three years under a Registered Dental Practioner, or in Mechanical Department of a recognised Dental Hospital whose arrangements are held to be satisfactory to the College (4).	Three years under a Registered Dental Licentiate is recommeded.	Three years under a Registered Practioner. Attendance at Hospital (6).

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
Practice of Dental Surgery in a recognised Dental Hospital, or in the Dental Department of a recognised General Hospital...	Two years.	Two years.	Two years (7).	Two years (7).
5—Fee...	£10 10s. over and above stamp duty.	£10 10s.	£10 10s. for First, and £10 10s. for Final.	£10 10s.
6—Least period during which unsuccessful Candidates are referred to their studies	Six months, subject to the decision of the Board.	Three months. *** No candidate admitted to this Examination who has been rejected by any other Licensing Board within three months.	Three months.	Six months.
7—Particulars of Examination	(A) *Written.* On General Anatomy and Physiology. General Pathology and Surgery; (1) Dental Anatomy and Physiology; Dental Pathology and Surgery. At the Practical Examination Candidates may be examined-	*Written and Oral*: (3). 1st Part—Anatomy, Physiology, Chemistry with Metallurgy.	*First:* *Physics*, Heat, Electricity, Light. *Chemistry* (inorganic). *Anatomy*—Histology and Physiology. *Final:* Dental subjects and General Surgery.	*Written, Oral & Practical:* 1st part—Anatomy, Physiology, Chemistry, and Metallurgy.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
Particulars of Examination.—*continued*	(*a*) On the treatment of Dental Caries. and may be required to prepare and fill cavities with gold or plastic filling or other material. or to do any other operation in Dental Surgery. [Candidates must provide their own instruments.] (*b*) On the mechanical and Surgical treatment of the various irregularities of Children's teeth. (*c*) On Mechanical Dentistry. (B) ***Oral:*** On all subjects in the Curriculum; conducted by use of Preparations, Casts and Drawings	2nd Part—Surgery, Medicine, Therapeutics, and Special subjects of Dental Anatomy and Physiology, Dental Surgery, Pathology, and Dental Mechanics. Registered Medical Practitioners are examined on special subjects only. There is a Practical Clinical as well as Written and Oral Examination in Dental and Oral Surgery. Pathology and Mechanics.	*Examination:* Written, Oral and Practical.	2nd Part—Surgery, Medicine, Materia Medica, and special Dental subjects. Practical Examination at a Dental Hospital. Candidates are to bring Excavators, Files and Plugging Instruments.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
8—DATE OF EXAMINATION.	May and November.	I. Professional Examinations. Tuesday, May 1, 1894. " July 24, 1894.	Second Monday in February, May and November.	Wednesday, Oct. 4th, 1893. " May 3rd, 1894.
9—MODIFIED) CONDITIONS OF ADMISSION TO EXAMINATION. (2). (*a*) Conditions of eligibility.		II. Professional Examinations. Following Thursday. N.B.—Students who commenced their professional education by apprenticeship, before July 22, 1878, are exempted from the Preliminary Examination	Candidates must be registered Dental Practitioners in practice before 1878.	The Second Examination takes place one day subsequent to these dates.
(*b*) Certificates, &c., required.			Certificates of moral and professional character, signed by two gentlemen holding Irish Medical or Dental Diplomas, members of the B.D.A. or Odontological societies. Name. Age. Address. Date of commencing practice, and whether such practice has been carried on in conjunction with any other business, and if so with what business.	

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
9—MODIFIED CONDITIONS OF ADMISSION TO EXAMINATIONS (*cont.*) (2).			Professional status. Particulars of Professional Education.	(8) Various undertakings as to Professional conduct, &c., have to be made by the Candidate.
(*c*) Manner of Examination				
Fee...			£26 5s.	
For further information apply to Secretary.	F. G. HALLETT, Esq., Examination Hall, Victoria Embankment, London, W.C.	FRANCIS CADELL, M.B., F.R.C.S.E., Secretary and Treasurer, 22, Ainslie Place, Edinburgh.	G. F. BLAKE, J.P., Royal College of Surgeons, Dublin.	ALEX DUNCAN, Esq., Faculty of Physicians and Surgeons, Faculty Hall, 242, St. Vincent Street, Glasgow.

(1.) Candidates who are Members of the College, or who have passed the Examination in Surgery of the Examining Board in England, or who shall produce evidence of having passed the Examination in Surgery for the Licence in Surgery of the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons in Ireland, or the Faculty of Physicians and Surgeons of Glasgow, or an examination in Surgery for a Degree in Medicine or Surgery at a University in the United Kingdom, will be exempt from re-examination in General Surgery and Pathology.

(2.) Candidates who have passed the Second Examination of the Examining Board in England, or who shall produce evidence of having passed the Examination in Anatomy and Physiology required for the Licence in Surgery of the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons in Ireland, or the Faculty of Physicians and Surgeons of Glasgow, or an Examination in Anatomy and Physiology required for a Degree in Medicine or Surgery at a University in the United Kingdom, will be exempt from re-examination in those subjects.

(3.) For curriculum required for Students who have commenced their studies *prior* to 1st October, 1890, see Prospectus of Regulations, page 5.

(4.) One year's *bonâ fide* apprenticeship with a registered dental practitioner, after being registered as a dental student, may be counted as one of the four years of professional studies. The three years of instruction in mechanical dentistry, or any part of them, may be taken by the student either before or after his registration as a student; but no year of such mechanical instruction shall be counted as one of the four years of professional study unless taken after registration.

(5.) Candidates who have passed the First and Second Examinations of the Examining Board in England, or who shall produce evidence of having passed the First and Second Examinations of the Scottish Conjoint Board; the third Professional Examination of the Royal College of Surgeons in Ireland; the corresponding Examinations required for a Degree in Medicine or Surgery at a University in the United Kingdom, will be exempt from the First Dental Examination.

(6.) Attendance for two years at a recognised Dental Hospital, or the Dental Department of a recognised General Hospital, in which special provision is made for the proper training of Dental Students.

(7.) Practice of recognised General Surgical Hospital required for six months.

(8.) Candidates qualified in Medicine and Surgery are admitted to the Final Examination on producing evidence of attendance in the Special Dental Courses, including Two (instead of Three) Years' Practical Instruction in Mechanical Dentistry; and they are examined on the Special Dental Subjects only. Candidates who avhe passed the Examination in Anatomy, Physiology and Chemistry, before any recognised Medical Board are exempt from the First Examination.

SPECIAL (DENTAL) HOSPITALS.

LONDON SCHOOL OF DENTAL SURGERY, LEICESTER SQUARE.

Consulting Physician.—Sir Richard Quain, Bart., F.R.S., M.D.

Consulting Surgeon.—Mr. Christopher Heath, F.R.C.S.

Consulting Dental Surgeons.—Sir John Tomes, F.R.S., F.R.C.S. L.D.S. ; Mr. T. A. Rogers, M.R.C.S., L.D.S.

Dental Surgeons.—Messrs Storer Bennett ; W. Hern ; G. Gregson ; L. Matheson ; C. E. Truman ; R. H. Woodhouse.

Assistant Dental Surgeons.—Messrs. H. Baldwin ; F. J. Bennett; J. F. Colyer ; W. H. Dolamore ; W. B. Paterson ; C. F. Rilot ; C. Robbins ; E. Lloyd-Williams ; H. Lloyd Williams ; A. C. Woodhouse and Mr. W. H. Woodruff.

Anæsthetists.—Messrs. G. H. Bailey ; Woodhouse Braine ; Dr. Dudley Buxton and Dr. Frederic Hewitt.

Assistant Anæsthetists.—Messrs. Carter Braine ; Henry Davis and G. Rowell.

Demonstrators.—Messrs. E. H. L. Briault ; T. H. Clarence ; G. Hern and E. Gardner.

Medical Tutor.—Mr. W. H. Dolamore.

Curator of Mechanical Laboratory.—Mr. A. J. Watts.

LECTURERS.—*Dental Surgery and Pathology.*—Mr. Storer Bennett.

Dental Anatomy and Pathology (Human and Comparative).—Mr. Arthur Underwood.

Dental Mechanics.- Mr. David Hepburn.

Metallurgy in its application to Dental purposes.—Dr. Foster Morley.

MECHANICAL LABORATORY.

A mechanical laboratory is fitted up which is under the care and superintendence of the lecturer on dental mechanics, and a highly skilled mechanic. Students will be required to take models, manufacture, and fit into the mouth dentures for those patients allotted to them by members of the staff. The actual manufacture to be under the superintendence of the mechanical assistant, while the adapting to the mouth will be supervised by Members of the Staff.

It is intended, in this manner, to supply a portion of the Student's education heretofore unprovided for, and to more perfectly equip him for the exigencies of dental practice. It will enable him to be in a better position to meet the requirements of the College of Surgeons of England with regard to mechanical dentistry, in which subjects the Board of Examiners for the L.D.S. may demand a practical examination from Candidates for that diploma.

GENERAL FEE FOR THE SPECIAL LECTURES REQUIRED BY THE CURRICULUM.

Viz., two Courses on Dental Anatomy, two Courses on Dental Surgery, two Courses on Mechanical Dentistry, and one course of Metallurgy, £15 15s.

Fee for the Two Years' Practice of the Hospital required by the Curriculum, £15 15s.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, £31 10s.

Students who perform Operations for Filling Teeth must provide their own Instruments for the same.

Additional Fees for a General Hospital for the two years, to fulfil the requirements of the Curriculum, vary from £50 to £60.

MEDICAL TUTOR.

The Medical tutor attends on four days in the week, from 5 to 7 p.m., for two months previous to two of the Annual Examinations.

MORTON SMALE, *Dean.*

NATIONAL DENTAL HOSPITAL AND COLLEGE,

GREAT PORTLAND STREET, W.

Hospital Staff.

Consulting Physicians.—Sir B. W. Richardson, M.A., M.D., F.R.S.; Sir W. H. Broadbent, M.D., F.R.C.P.

Consulting Surgeons.—Sir Spencer Wells, Bart., F.R.C.S.; Christopher Heath, F.R.C.S.

Consulting Dental Surgeon.—Sir Edwin Saunders, F.R.C.S.

Dental Surgeons.—Messrs. A. F. Canton; Marcus Davis; C. W. Glassington; H. G. Read; Alfred Smith; F. Henry Weiss.

Assistant Dental Surgeons.—Edgar Beverley; Sibley W. Read; T. G. Read; W. Rushton; Sidney Spokes; Willoughby Weiss.

Anæsthetists.—Messrs. A. E. Bridger; C. H. Cosens; Percy Edgelow; G. Everett Norton; C. J. Ogle; Dr. Maughan.

LECTURERS.

Dental Anatomy and Physiology.—Mr. Sidney Spokes.
Dental Surgery and Pathology.—Mr. Willoughby Weiss.
Dental Mechanics.—Mr, Harry Rose.
Dental Metallurgy.—Mr. W. Lapraik.
Operative Dental Surgery.—Mr. George Cunningham.
Dental Materia Medica.—Mr. C. W. Glassington
Elements of Histology.—Dr. James Maughan.
Demonstrator of Dental Mechanics.—Mr. W. R. Humby.

FEES.

GENERAL FEES FOR SPECIAL LECTURES REQUIRED BY THE CURRICULUM OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

[N.B. The following is the scale of fees until October 1st, 1894; after which the Total Fee will be 30 guineas.]

Two Courses on Dental Anatomy and Physiology		£12	12	0
,, ,, Dental Surgery and Pathology				
,, ,, Dental Mechanics	... ...			
One Course on Dental Metallurgy	... ...			

FEES TO SINGLE COURSES.

	One Course.			Two Courses.		
Dental Anatomy and Physiology ...	£2	12	6	£4	4	0
Dental Surgery and Pathology ...	2	12	6	4	4	0
Dental Mechanics	2	12	6	4	4	0
Dental Metallurgy	3	3	0	5	5	0
*Operative Dental Surgery	2	12	6			
*Dental Materia Medica	2	2	0			
*Elements of Histology	1	1	0			
*Demonstration on Dental Mechanics	1	1	0			

Fee for the two years Hospital Practice required by the Curriculum, £12 12s.

Total fee for the Special Lectures and Hospital Practice required by the Curriculum, £25 4s.

The fees for the necessary General Hospital Practice and Lectures vary from about 55 to 65 Guineas, particulars of which are to be found in the Calendars of the several Schools.

MR. SIDNEY SPOKES, *Dean.*

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*These Lectures are free to Students of the College who have fully entered for the Special Lectures.

GUY'S HOSPITAL DENTAL SCHOOL.

Dental Surgeon.—F. Newland-Pedley, F.R.C.S., L.D.S.E.

Senior Assistant Dental Surgeon.—W. A. Maggs, L.R.C.P., M.R.C.S., L.D.S.E.

Assistant Dental Surgeons.—J. Mansbridge, L.R.C.P., M.R.C.S., L.D.S.E.; H. L. Pillin, L.D.S.E.; G. O. Richards, M.R.C.S., L.D.S.E.; R. W. Rouw, L.R.C.P., M.R.C.S., L.D.S.E.; J. H. Badcock, L.R.C.P., M.R.C.S., L.D.S.E.; A. E. Baker, L.R.C.P., M.R.C.S.; L.D.S.E.; J. O. Butcher, L.D.S.E.; P. T. Harris, M.R.C.S., L.S.A., L.D.S.E.; F. M. Hopson, L.D.S.E.; H. Stoner, L.D.S.E.

Anæsthetists.—F. W. Cock, M.D., M.S.; J. F. W. Silk, M. D.; H. F. Lancaster, M.D.; A. D. Fripp, M.B., B.S.; W. J. Scott, M.B., B.S.; C. J. Ogle, M.R.C.S.

LECTURERS.

Dental Surgery and Pathology.—Mr. Newland-Pedley.
Dental Anatomy and Pathology.—Mr. Maggs.
Dental Mechanics.—Mr. Richards.
Metallurgy.—C. E. Groves, F.R.S.
Operative Dental Surgery.—Mr. Badcock.
Anæsthetics.—T. Bird, M.A., Oxen, M.R.C.S.

DEMONSTRATORS.

Dental Microscopy.—Mr. Mansbridge.
Dental Mechanics.—Mr. Pillin.
Tutor.—Mr. Rouw.
Dean.—Dr. Shaw.

FEES.

A ticket which gives admission to the special lectures and demonstrations, and dental practice only, may be obtained for 30 guineas paid on entrance.

The course of dental instruction and Practice extends over a period of two years, and must be taken by the student continuously from the time of entering the school. Five guineas is charged for any further period of dental practice not exceeding six months.

Arrangements cannot be made for short periods of instructions.

A ticket which gives admission to the general lectures, demonstrations, and hospital practice, required for the L.D.S. Eng., may be obtained for £60 paid on entrance, or 60 guineas paid in instalments of 30 guineas at the beginning of the first year, and

30 guineas at the beginning of the second year. From these fees a reduction of 12 guineas will be made in the case of students who produce, on joining the school, recognized certificates of instruction in chemistry, practical chemistry, and materia medica.

The inclusive fee for students entering for the course of instruction for the M.R.C.S., L.R.C.P., and L.D.S., Eng., is £170 paid in one sum, or 170 guineas paid by instalments at the commencement of each academical year:—first year 60 guineas, second year 60 guineas, third year 30 guineas, fourth year 20 guineas. An extra fee of one guinea is charged for practical Chemistry,

EDINBURGH.

DENTAL HOSPITAL AND SCHOOL.

Consulting Physician.—Alex. Peddie, M.D.

Consulting Surgeon.—Joseph Bell, M.D., F.R.C.S.E.

Fee for the two years' practice required by the Curriculum, £15 15. Fee for each course of lectures, £3 5s.

Consulting Dental Surgeon.—John Smith M.D., F.R.C.S.E.

Dean.—W. Bowman Macleod.

Dental Surgeons.—Messrs. W. Bowman Macleod; Andrew Wilson; Malcolm Macgregor; George W. Watson; J. Stewart Durward; James Mackintosh; William Forrester.

Assistant Dental Surgeons.—John S. Amoore; J. Graham Munro; T. Gregory; John Turner; David Monroe; Frederick Page; S. Simmons; R. N. Hannah.

Chloroformists.—J. M. Farquharson, M.D., C.M.; W. Lundie, M.D.; G. Matheson Cullen, M.D.

DENTAL SCHOOL (LECTURERS).

Dental Anatomy and Physiology (*Human and Comparative*)—Mr. Andrew Wilson.

Dental Surgery and Pathology.—Mr. George W. Watson.

Mechanical Dentistry.—M. W. Bowman Macleod.

Practical Mechanics.—Assistant Demonstrator, J. Stewart Durward. The demonstrations will be spread over the two years of hospital practice. Students will require to furnish their own hand tools.

General fee for the Hospital Practice and Special Lectures required by the Curriculum.—Hospital Practice, £15 15s. One course each of Dental Anatomy, Dental Surgery, and Mechanical Dentistry and Demonstrations, £9 15.—£25 10s.

Fees to separate Classes.—Dental Anatomy, Dental Surgery, Mechanical Dentistry, £3 5s. each.

The hospital practice and lectures qualify for the Dental Diploma of the Royal College of Surgeons, Edinburgh, and also for that of the other licensing bodies. Second courses of the lectures, as required by the Royal College of Surgeons of England, £2 4s.

The session 1892-93, opens October 3rd, 1893. General fee for the hospital practice and special lectures required, £25 10s.

For further particulars, apply to the Dean, 5, Lauriston Lane, Edinburgh.

GLASGOW.

DENTAL HOSPITAL AND SCHOOL, 4, CHATHAM PLACE, STERLING ROAD.

Consulting Physician.—W. T. Gairdner, M.D., Professor of Practice of Physic, Glasgow University.

Consulting Surgeon.—Wm. M'Ewen, M.D., L.L.D., Professor of Surgery, Glasgow University.

Dental Surgeons.—Biggs, John A., L.D.S.; Cameron, James, L.D.S. ; Cumming, James, L.D.S. ; Gray, W. H., L.D.S. ; Martin, W. Foulds, L.D.S. ; Price, Rees, L.D.S. ; Wallace, W., M.A., M.B., L.D.S. ; Whyte, Alexander, L.D.S. ; Woodburn, William Holt, L.D.S.

Administrators of Anasthetics.—Campbell, A. T., M.D., C.M. ; Henderson, T. Brown, M.D., F.F.P.S.

LECTURERS.

Dental Surgery and Pathology.—Rees Price, L.D.S.

Dental Anatomy and Physiology.—W. Wallace, M.A., M.B., L.D.S.

Dental Mechanics.—John A. Biggs, L.D.S.

House Surgeon.—J. Sim Wallace, B.Sc., M.B., C.M.

Dean.—James Rankin Brownlie, L.D.S.

Secretary.—D. M. Alexander, Solicitor, 117, Wellington Street, Glasgow, who will forward detailed Prospectus of the School.

BIRMINGHAM SCHOOL OF DENTISTRY, MASON COLLEGE (QUEEN'S FACULTY OF MEDICINE).

The teaching of Dentistry has been undertaken by the Queen's College acting in Association with the Birmingham Dental Hospital, and the Birmingham Clinical Board, so that students may fully qualify themselves for the Dental Diplomas of the Royal Colleges. The work of the Dental Faculty is carried on at Mason College, in premises especially erected for the purpose, and fitted up with a due regard to the requirements of a modern Dental Education.

Lecturers for the Dental Curriculum.

Dental Surgery.—Frank E. Huxley, M.R.C.S., L.D.S.

Dental Anatomy.—J. Humphreys, L.D.S.I., F.L.S.

Dental Mechanics.—W. T. Elliott. L.D.S. Edin., and I., F.C.S.

Dental Metallurgy.—W. A. Tilden, D.Sc., F.R.S. Thomas Turner, Assoc.R.S.M.

Surgical Diseases of the Mouth.—F. Marsh, F.R.C.S.

Medical Diseases of the Mouth.—Stacey Wilson, M.B., M.R.C.P.

Demonstrators :—*Operative Dental Surgery.*—W. T. Madin, L.D.S.

Mechanical Dentistry.—F. H. Goffe, L.D.S.

Dental Pathology.—C. D. Marson, M.R.C.S., L.R.C.P., L.D.S.

General Subject.—As taught in Medical Department of Mason College.

College Fees.

A Composition Fee of £42, payable in one sum or in two sums, viz., £21 at the beginning of the first year and £21 at the beginning of the second year of studentship, admits to the full curriculum required for the Dental Diploma (*exclusive of the necessary Hospital Practice*).

Students wishing to take the Diplomas of M.R.C.S., and L.R.C.P., in addition to their dental qualifications, pay a Composition Fee of £73 10s. This covers all College fees.

Hospital Fees.

The Dental Hospital Practice and Demonstrations.

Composition Students (2 years)	£10	10	0
Non-Composition Students (2 year)	£14	14	0
Non-Composition Students (1 year)	£8	8	0
Non-Composition Students (6 months)	£5	5	0

For General Surgical Hospital Practice, Lectures, and Demonstrations.

Surgery, 2 winters	£10 10 0
Surgery, 1 winter	£6 6 0

N.B.—Further particulars may be obtained on application to the Registrar at the College, or to the Hon. Secretary of the Dental Department, Mason College (Mr. J. Humphreys).

THE OWEN'S COLLEGE, MANCHESTER.

Dental Department.

Professors and Lecturers.—Anatomy, Professor A H. Young. Physiology, Professor Wm. Stirling. Medicine, Professor J. Dreschfeld. Surgery, Professor T. Jones. Clinical Surgery, Professor W. Whitehead. Practical Surgery, Messrs. G. A. Wright ; J. Collier. Operative Surgery, F. A. Southam. Chemistry, Professor H. B. Dixon. Materia Medica, Professor D. J. Leech. Dental Surgery, George G. Campion. Dental Anatomy, W. A. Hooton. Dental Mechanics, Thos. Tanner. Dental Metallurgy, Dr. C. A. Burghardt. Operative Dentistry, G. O. Whittaker,

Demonstrator on Dental Histology and Pathology.—D. Headridge.

The fee for the two years' lectures, &c., required by the dental curriculum of the Colleges of Surgeons is £50, payable in two sums of £25 each at the beginning of the first and second years of studentship.

The two years' general hospital practice is taken at the Royal Infirmary. The fee is £10 10s., and includes that for attendance on the lectures on clinical surgery.

For further particulars with regard to the Dental Department, application should be made to the Registrar, The Owen's College, Manchester.

THE VICTORIA DENTAL HOSPITAL, MANCHESTER.

16, Devonshire Street, All Saints.

Consulting Physicians.—Dr. Simpson, M.R.C.S. ; Dr. Leech, F.R.C.P.

Consulting Surgeons.—E. Lund, F.R.C.S. ; F. A. Heath, M.R.C.S. ; T. Jones, F.R.C.S. ; J. Hardie, F.R.C.S, *Consulting Dental Surgeons.*—H. Campion, M.R.C.S. ; G. W. Smith, M.R.C.S., L.D.S.Eng.

Dental Surgeons.—G. G. Campion, L.D.S.Eng. ; E. P. Collett, L.D.S.Eng. ; W. Dougan, L.D.S.I. ; L. Dreschfeld, L.D.S.I. ; J. W. Dunkerley, L.D.S.I.; W. Dykes, L.D.S., Glas.; W. Headridge, L.D.S.I. ; W. A. Hooton, L.D.S,Eng. ; I. Renshaw, L.D.S.I. ; W. Simms, L.D.S.I. ; W. Smithard, L.D.S.I. ; T. Tanner, L.D.S.Eng. ; G. O. Whittaker, L.D.S.Eng.

Assistant Dental Surgeons.—D. Headridge, L.D.S.,Eng. : P. A. Linnell, L.D.S.Eng. ; F. W. Minshall, L.D.S.I. ; C. R. Morley, L.D.S.Eng. ; C. H. Smale, L.D.S.Eng.

Administrators of Anæsthetics.—Dr. J. Prince Stallard, M.B. ; A. Wilson, M.R.C.S.

Dean.—G. G. Campion, L.D.S.Eng.

The fee for two years' hospital practice required by the College of Surgeons, is £12 12s. For further information apply to G. G. Campion, *Dean.*

LIVERPOOL DENTAL HOSPITAL.

MOUNT PLEASANT.

Consulting Physician.—Thomas Robinson Glynn, M.D., M.R.C.P.Lond.

Consulting Surgeon.—Frank T. Paul, F.R.C.S.Eng.

Consulting Dental Surgeons.—C. Alder, L.D.S. ; H. C. Quinby, L.D.S. ; W. H. Waite, L.D.S., D.D.S.

Dental Surgeons.—M. Alexander, L.D.S.I. ; Reg. H. Bates, L.D.S. Eng. ; R. M. Capon, L.D.S. Clasg. ; E. A. Councell, L.D.S.Eng. ; J. Coysh, L.D.S.Eng. ; R. Edwards, M.R.C.S., L.D.S.Eng. ; W. Mapplebeck, L.D.S.I. ; Thos. Mansell, L.D.S.Edin. ; J. N. P. Newton, L.D.S.,Eng., D.D.S. ; W. J Pidgeon, L.D.S.Eng. ; J. Royston, L.D.S.Eng.

Demonstrator of Operative Dental Surgery.—J. P. Roberts, L.D.S.Edin.

Chloroformist.—J. E. Gemmel, M.B., C.M.

House Surgeon.—L. J. Osborn, L.D.S.Eng.

The Liverpool Dental Hospital, founded in the year 1864, combines the work of a most useful charity with all the advantages of a Dental School recognised by all the licensing bodies.

The Hospital is conveniently situated within five minutes' walk of the Medical School. The premises are substantial, having four separate operating rooms and a work-room, all facing north, which is recognised as the best aspect for securing a good light.

There is an abundant daily supply of patients ; over 20,000 cases were treated last year.

Every facility is afforded to Students who are anxious to acquire proficiency in Dental Surgery, and to prepare themselves for the L.D.S. of any of the licensing bodies.

The Committee have this year incurred considerable expense in re-decorating and painting the internal portions of the building, and a new room has been fitted up for the exclusive use of the students.

The electric light has been introduced (the lamps being supported on brackets specially manufactured), and will doubtless prove of immense advantage to the operators.

Fee for two years' hospital practice, 12 Guineas. Perpetual 15 Guineas. R. Edwards, *Dean.*

DEVON AND EXETER DENTAL HOSPITAL.

Consulting Surgeons.—Messrs. A. J. Cumming, F.R.C.S.Eng. ; James Bankart, M.B.Lond., F.R.C.S.Eng.

Consulting Dental Surgeon.—S. Bevan Fox. L.D.S.Eng.

Dental Surgeons.—Messrs. J. T. Browne-Mason, L.D.S.Eng. ; Henry Biging Mason, L.D.S.Eng. ; S. Mundell, L.D.S.Eng. ; T. G. T. Garland, L.D.S.I. ; J. M. Ackland, M.R.C.S., L.D.S.Eng. ; J. A. Mallet, L.D.S.Eng.

Honorary Secretary.—George A. Townsend.

Attendance on the practice of this Hospital is recognised by the Royal College of Surgeons of England as qualifying for their Dental Diploma.

Pupils of any member of the staff or other registered Practitioner (being a Life or Annual Governor) are permitted to attend the practice of the Hospital, subject to the approval of the Medical Sub-Committee, on payment of £5 5s. annually to the funds of the Institution. Students attending the practice of the Hospital must consider themselves strictly under the control of the Medical Officers, and must not undertake any operation without the consent of the Dental Surgeon for the day.

THE DENTAL HOSPITAL OF IRELAND.

25, Lincoln Place, Dublin.

Consulting Physicians.—F. R. Cruise, M.D.; John W. Moore, M.D.

Consulting Surgeons.—E. H. Bennett, F.R.C.S.I.; Sir W. Stokes, F.R.C.S.I.

Consulting Dental Surgeons.—R. H. Moore, F.R.C.S.I.; Daniel Corbett, M.R.C.S.E., L.D.S.Eng.

Dental Surgeons.—Messrs. Robert Hazleton; W. Booth Pearsal; R. Theodore Stack; A. W. W. Baker; Daniel Corbett; George Wycliffe Yeates; G. M. P. Murray.

Anæsthetists.—Dr. Christopher Gunn; Messrs. John G. Cronyn; John R. Graves.

Pathologist.—William Mallett Purser.

Registrar.—William A. Shea.

In connection with a Dental Hospital of Ireland, the Dental School will be open for the Winter Session on October 2nd, 1893.

In addition to Clinical Instruction, courses of lectures will be given at the Hospital in Dental Surgery and Pathology, and in Mechanical Dentistry, by R. Theodore Stack; A. W. W. Baker; W. Booth Pearsall, and Daniel Corbett; and at the School of Physic, which is within a few yards of the Hospital, special lectures for Dental Students will be given in Dental Anatomy; and in Metallurgy by Professor Cunningham and Professor Reynolds. The lectures on dental surgery and medical dentistry will be given during the winter, those in dental anatomy and metallurgy during the summer months. Among the advantages of the school is the mechanical laboratory, where every effort is made to assist the student in mechanical dentistry. In addition to practical instruction in the details of gold, dental alloy, vulcanite, celluloid, and continous gum work, special demonstrations will be given in the mechanical treatment of cleft-palate, in the treatment of dental irregularities, and in the various methods of inserting pivot teeth. Regulations as to fees and other conditions are the same that exist at the Dental Hospital of London, Leicester Square. Any further information can be obtained from the registrar of the hospital, or

R. Theodore Stack, *Dean.*

MEDICAL SCHOOLS.

BARTHOLOMEW'S HOSPITAL, SMITHFIELD, E.C.

Fee for general subjects for students of dental surgery:—First winter, 31½ guineas; first summer, 31½ guineas; or a single payment of 63 guineas.

Dental Surgeons.—W. B. Paterson; J. Ackery; H. G. Read; R. C. Ackland.

Dr. T. W. Shore, *Warden.*

CHARING CROSS HOSPITAL, W.C.

The Composition fee for dental students is 54 guineas in one sum, or 60 guineas, payable in two instalments of 30 guineas each, viz:—30 guineas on entering; 30 guineas 12 months later.

Dental Surgeon.— J. F. Colyer.

Dr. J. Mitchell Bruce, *Dean.*

KING'S COLLEGE, STRAND, W.C.

No special arrangements are made for dental students.

Dental Surgeon.—Arthur Underwood.

Prof. Curnow, *Dean.*

LONDON HOSPITAL, MILE END, E.

Composite fee for dental students:—Hospital practice and lectures, £42.

Dental Surgeon.—Mr. Barrett.

Munro Scott, *Warden.*

MIDDLESEX HOSPITAL, BERNERS STREET, W.

Students who intend to become Licentiates in Dental Surgery of the Royal College of Surgeons are admitted to attend the requisite courses of lectures and hospital practice on payment of a fee of 54 guineas, in one sum on entrance, or by instalments of 40 guineas on entrance, and 20 guineas at the beginning of the second winter session.

Dental Surgeons.—Storer Bennett; Wm. Hern.

Sidney Coupland, M.D., *Dean.*

ST. GEORGE'S HOSPITAL, GROSVENOR PLACE, S.W.

Fee for general subjects required for the Diploma in Dental Surgery, including practical chemistry, £55; payable in two instalments: first year, £30; second year, £25.

Isambard Owen, M.D., *Dean.*

ST. MARY'S HOSPITAL, PADDINGTON, W.

Entrance fee to the general hospital practice and lectures required for the examination in Dental Surgery at the Royal College of

Surgeons, England, £55; payable in two instalments:—First year £30; second year, £25. *Dental Surgeon,* Morton Smale.

G. P. Field, *Dean.*

ST. THOMAS'S HOSPITAL, ALBERT EMBANKMENT, S.E.

The fee for attendance on the general subjects required of students in dental surgery is, for the two years, £95; or by instalments, £55 for the first year, and £15 for the second year. If certificates for *dental* practice are also required a special fee for that subject has to be paid.

Dental Surgeon:—C. C. Truman. G. H. Makins, *Dean.*

WESTMINSTER HOSPITAL, BROAD SANTUARY, S.W.

The fees for the general surgical practice and lectures required for the dental diploma of the Royal College of Surgeons may be paid in one or two ways, viz.—1. In one payment on entrance 50 guineas. 2. In two payments of £30 and £26, to be made respectively at the commencement of each academic year. These payments include the library fee, and entitle the student to attendance on the tutorial classes. A scholarship value £20 is offered for competition to commencing Dental Students.

Dental Surgeons.—C. Lloyd Williams; W. H. Dolamore.

W. G. Spencer, *Dean.*

UNIVERSITY COLLEGE, GOWER STREET, S.W.

The fee for the courses required to be taken at a medical school for the L.D.S. is 50 guineas; or including Chemistry, Practical Chemistry, Physics and Materia Medica, 65 guineas.

Dental Surgeon.—Sidney Spokes, V. A. H. Horsley. *Dean.*

SCHOOL OF MEDICINE, EDINBURGH.

The fees for the general subjects (including practice at the Royal Infirmary) required of dental students, according to the curriculum of the Royal College of Surgeons of Edinburgh, amount to £38 10s.

R. N. Ramsay, Royal Bank, 24, Forrest Road, *Secretary.*

ANDERSON'S COLLEGE, GLASGOW.

The fees for the general subjects required of dental students, as prescribed by the curriculum of the Faculty of Physicians and Surgeons of Glasgow, amount to £25 14s. 6d. And the fees at the dental school for the special portion of the curriculum, including £15 15s. for dental hospital practice, are £23 2s.—total, £48 16s. 6d.

Dr. A. M. Buchanan, *Dean.*

THE DENTAL RECORD.

VOL. XIII. OCTOBER 1st, 1893. No. 10.

THE COLUMBIAN DENTAL CONGRESS.

WE feel no apology is needed to our readers for the large space occupied, in this issue, by an account of the meetings held at the Chicago Congress. On the contrary, we believe they will welcome an abstract report of these deliberations. We have not aimed so much at completeness, but have rather desired to present the principal points of interest in a concise form. A more lengthy report may be gained in the daily issues of the "Cosmos," the "Review," and the "Tribune," while, doubtless, the official report, yet to be published, will be of still greater interest and amply repay careful reading. The mass of literature, we might almost say the deluge of literature, which daily threatens to overwhelm us, renders the task of selection and abbreviation a useful, if a somewhat wearisome and thankless one. This task we have, in this instance, attempted, and leave it in the hope that many of the lessons to be gathered from the papers read and the discussions held, will come into greater prominence by their comparative isolation and brevity.

A congress may be estimated from several points of view. Firstly, there are the records of the proceedings. We read these to see how the world of thought moves on, to gather what is new, and to learn from the experience of others what methods to adopt, what pitfalls to avoid. Secondly, in a congress dealing so largely with a subject, which has a mechanical bearing, there is much that can be learnt by personal contact with others. No transactions can ever reproduce or convey these lessons, they are often minute in themselves, but, like many other little things, they are of the very first importance and collectively make up a very large slice of our professional knowledge and skill. Thirdly, there is the social side of a meeting, under its soothing influence, begotten largely of better knowledge, angularities get rounded off, annoyances allayed, and mutual appreciation heightened. It is an old truth, that to know a man is often to like him. We do not all, or indeed mostly, turn our best side outwards, and often the real individual, for the most part a kindly well-meaning personality, is lost under an exterior of carping criticism, irritating mannerisms and nervous self assertions.

Of this congress in particular we can but judge from the first point of view, though we hope to present our readers with the impressions of one who was there, from the pen of Dr. Cunningham. No one can fail to be struck with the amount of work which the meeting managed to get through, and with the number of papers read. These, as was, of course, inevitable, varied considerably in merit, some we confess strike us as hardly worthy of the occasion, but on the whole we fancy our readers will agree with us that a considerable ground was covered and much useful information gathered.

THE COLUMBIAN DENTAL CONGRESS.

The Work of the Congress was carried on in General Session, and in Eight Sections.

General Session.

The President of the World's Congress auxiliary delivered an address to the Dental Congress, welcoming them to Chicago, and introducing Dr. Walker, the President of the Executive Committee, who, in his turn, introduced Dr. L. D. Shephard, of Boston, the President of the Dental Congress.

The President delivered a most interesting

Inaugural Address,

which, after sketching the origin of the present Congress, was devoted to a historical retrospect. Speaking of dentistry he said:—Perhaps of no other profession of equal altitude and amplitude can it be said, as of dentistry, that its evolution is embraced within the span of one human life. All vocations are entitled to honor where the work is honest and the ends sought for are commendable, but especial honor has ever been rendered to those vocations which deal with human ailments and sufferings, whether mental or physical, and to such vocations from antiquity the differential honor of the name profession, formerly more narrowly used than at present, has been given. The relative rank among professions is not unimportant, but can we not claim with proper modesty and truthfulness that for the prevention and amelioration of human suffering, and for the peace and health and prolongation of human existence, dentistry is to-day without a peer among them all. Dentistry had its embryonal stage; its inception is shadowed by the mists of antiquity. Through ages it slowly gained, and we cannot describe its progress. During the last century and in the early part of this century there were signs of life and movement, the quickening had taken place, the world was expectant, and the joyful consummation, by the birth of a new profession, freighted with beneficence to suffering humanity, occurred in 1839, in the city of Baltimore, by the organization of the first dental college in the world. The dental aspirant before that time found every avenue to knowledge carefully defended. Knowledge could only be obtained in the private office of a dentist, and the ambitious student was obliged to buy it, frequently at fabulous prices prohibitive to the majority. Let us bear in mind that the prominence given to the establishment of this first professional school, as marking a natal period, is not primarily because it was the first professional school; that is of course noteworthy, so is the establishment of a new manufacturing business in a community, for it may be followed by other enterprises, and so the place becomes prosperous —but the point should be emphasized, and it is the great point, that here was the beginning of a change of *spirit* as well as of method. Before this it was a trade, ever mindful of self, accumulative, afraid of competition, exclusive, faithful to the immediate patient and anxious to do him good, but regardless of the rest of the world, dominated by selfish interests, carefully hoarding knowledge, with no broad professional spirit—no brotherhood feeling. This same year saw the publication of the first dental periodical in the world, the *American Journal of Dental Science*. The same spirit—the same ambition for the profession and the same regard for humanity —actuated the generous and enthusiastic founders of journalism as of the college. The same few pioneers of progress who started the college and magazine in 1839, in association with others of like spirit and motive on August 18th, 1840, met in New York and organized the American Society of Dental Surgeons. No authentic records of any previous dental society exist. So we thus see, within a few months, the erection of the great tripod upon which all professional advancement must rest—the college, the journal, and the association. In the year 1841 was enacted the first State law in regard to dentistry. It is probably also the first law in any country. He did not include legislation as among the important and fundamental causes of dental progress, for the reason that the Alabama law stood alone among the States in this country for over twenty-five years, the next law to be passed being that of New York in 1868. The English law was enacted in 1878, and in other countries about that date or later. While an indirect and inevitable result of dental laws has been to help the colleges by making an education a pre-requisite to legal admission to practice, and hence to elevate the standards of the profession, there could be no justification for such prohibitive or restrictive enactments except as a safeguard to public health under the general police powers which in modern times have become so broadly applied and universally supported by the judiciary. The President then referred to discovery of Anæsthetics by Wells and by Morton, and to discuss the part played in it by both these dentists. He quoted Lecky's remark :—"It is probable that the American inventor of the first anæsthetic has done more for the real happiness of mankind than all the philosophers from Socrates to Mill." In the following decade, 1850 to 1860, colleges, magazines, and associations multiplied and jointly contributed to bring the profession more and morein touch with progressive thoughts and truths,the most distinctive discovery of the decade and most momentous in its influences was that property of gold, which, previously considered detrimental, was now to be welcomed as its most valuable characteristic—cohesion. The introduction of crystal gold and the discovery of the cohesiveness of freshly annealed foil laid the foundation for the new era in operative dentistry. Let us never forget that while others claimed the latter discovery and doubtless had known of it and availed themselves of it for some time, Dr. Robert Arthur lost no time in freely sharing his discovery, as soon as made, with the whole profession. He thus achieved a distinction of which others have never been able to deprive him. Rigg and his treatment of Pyorrhea Alveolaris were briefly touched upon. Through him a dire disease has been robbed of its terrors, the profession has been stimulated throughout the world to study its etiology and progress, and the premature loss of teeth from this disease is no longer considered providential or respectable. He next referred to the superiority of the older practitioners as plate-workers. A loss of skill which he laid at the door of the introduction of vulcanite. Thete has been grave doubt whether vulcanite in dentistry has been a blessing or a curse to the world. A superficial observer might contend that when organs so important to health were lost, it was a blessing that substitutes could be within the reach of all but those in abject poverty. But we know to what a shameful extent the harpies in our number, by appeals to cowardice and cupidity, despoiled the mouths of the confiding public of millions upon millions of strong and healthful teeth to make place for their bungling, disfiguring, and filthy substitutes. It did seem for a time that the whole profession would be engulfed in a sea of obloquy. But the reaction happily came, the tide turned, and we can congratulate ourselves and the world that the danger is fast disappearing by the increase of laboratory skill, called for by the modern artificial crown and bridge work. After mentioning the advances made in the more scientific researches and to the impulse given to plastics by the New Departure movement, he extended an official welcome to all—a welcome to every American, who has come with comparative ease, but an especial welcome to those who have travelled long and far, from foreign climes and over broad seas, bringing with them the choice perfumes and rare products of a different soil from ours, but which are indispensable to the adornment and complete furnishing of the universal banquet of good things for us and for mankind. That these may find their visit both pleasant and profitable is the wish of every one of their American hosts. And finally, let us all improve the opportunities presented, that this week may be so full of inspirations and valuable results that it shall be a milestone in the march of dental professional progress.

At the conclusion of this address responses were made by the representatives of foreign countries. Dr. GEO. CUNNINGHAM spoke on behalf of England, though he stated that he was present in no official capacity.

2nd day.—A paper was read by *Otto Zsigmondy*, Vienna, on

"CONGENITAL DEFECTS OF ENAMEL."

That striking anomaly in enamel-development known as "erosion" or "atrophy" occurs quite frequently. In the lowest grades of the affection, superficial pits of greater or less depth are found at isolated points in the otherwise apparently normal enamel. These pits may be isolated, or they may occur in rows When the pits are confluent, furrows are developed which may embrace the crown like a ring. At times several of such furrows are found arrayed in series one above the other. In other cases the enamel appears as if sown with small pits (honey-combed teeth of the English). In still other cases the enamel seems to be entirely absent at certain points, and the dentine itself comes to the surface. The layer of enamel lining the pits possesses a rough uneven surface, a more or less yellowish or brownish color, and lacks the proper polish and normal transparency, while the enamel in the immediate neighbourhood of the spots has all the characteristics of the perfect tissue. In those teeth in which the dentine is exposed or covered by a thin layer of enamel only, the enamel of the normal portion of the tooth stands out in the form of an annular swelling, a circumstance which has influenced certain authors to speak of the thickening of the enamel at those points. But, as can readily be seen in sections of such teeth, a true increase in the thickness of the layer of enamel above the normal never occurs. The question of the etiology of these deformities has often been discussed. As the anomaly is hardly ever limited to a single tooth, as would be the case if the cause were purely local, but involves in the majority of cases the entire denture, we must seek for the cause in general diseases of the organism whose effect as regards the other tissues of the body has vanished, while its influence has become permanent in the teeth. Researches undertaken with the object of showing whether the enamel formed coincidently with interglobular spaces in the dentine also show traces of interruption in normal development, have shown that analogy really exists. When there is a furrow on the enamel the external boundary line of the enamel gradually approaches the surface of the dentine, whence it suddenly turns sharply outwards. In section a delicate but well-marked line, broken here and there, traverses the whole extent of the enamel as far as the surface of the dentine, and in direct continuation of the first portion of the line limiting the defect and running in the same direction. This line makes an angle of fifteen to thirty degrees with the surface of the dentine. Its direction is thus as a whole the same as that of the brownish parallel bands of Retzius, which frequently occur. If the disturbance to the nutrition of the enamel occurs at a time when the enamel cells in the region of transition between the internal and external epithelium have not yet begun the formation of enamel, those cells of the enamel which have produced the prisms already calcified to a considerable extent are destroyed, hence the further development of the prisms becomes impossible. Those prisms belonging to the enamel situated nearer the crown of the tooth not being developed to the same extent, while suffering some interruption in development, nevertheless continue to progress after the disturbing influence has ceased to make itself felt, and may in many cases attain their normal size. The prisms in the region of the neck of the tooth in which calcification has not yet begun at the time of activity of the disturbance, of course suffer no interruption to development.

In the discussion following, the question that chiefly arose had regard to so-called "Hutchinson's Teeth." Dr. Zsigmondy stated that he had not seen this abnormality in deciduous central incisors, though otherwise he met with the same defects in the enamel of the deciduous as in the teeth of the permanent set.

3rd day.—A paper was read by *W. D. Miller*, of Berlin, on

"METHODS FOR OBVIATING THE EXTRACTION OF DEVITILIZED PULPS."

The writer pointed out that this method was applicable chiefly to back teeth. He said that our efforts should be directed not to retaining the vitality of the root-stumps, but to preventing their subsequent decomposition by impregnating them with a suitable antiseptic, which must be strong, soluble and diffusible, but not so as to be completely taken up by surrounding tissue. It should coagulate the pulp, but this is not essential.

Dental antiseptics are divided into three groups:—

1. Those possessing in a high degree the power of imparting antiseptic qualities to root-pulps, such as cyanide of mercury, bichlorid of mercury, diaphtherin, sulphate of copper, salicylate of mercury, oil of cinnamon, ortho-kresol, carbolic acid, trichlorphenol, chlorid of zinc. The last four are, however, decidedly inferior to the others; they penetrate the pulp very rapidly, chlorid of zinc surprisingly so, but they are lacking in the necessary powerful antiseptic qualities, and are so diffusible that in the course of a few weeks they disappear altogether from the pulp.

2. Those of doubtful value: Thymol, salicylic acid, eugenol, campho-phenique, hydronaphthol, A and B naphthol, acetico-

tartrate of aluminum and some essential oils, resorcin, thallin, sulfo-carbolate of zinc, oil of birch, iodid of sodium, nitrate of sodium, etc.

3. Those nearly or quite worthless: Iodoform, basic anilin coloring-matters, borax, boracic acid, dermatol, europhen, chlorid of lime, peroxid of hydrogen, sozoiodol salts, iodol, tincture of iodin, spirits of camphor, naphthalin, etc.

The attempt to apply these results to practice was first made with the bichlorid of mercury, which has been used since 1890 in some four hundred to five hundred cases, first in the form of small tablets, having the composition :

Sublimate, 0.01 gram ;		Sublimate, 0.01 ;
	or	
Boracic acid, 0.02 gram ;		Common salt, 0.02

The pulp having been completely devitalized, the pulp-chamber was thoroughly opened and cleansed, and a tablet applied and slightly crushed with an amalgam plugger, moistened with water and covered with a layer of tin foil (I now use gold foil), and the amalgam or cement filling immediately inserted. In about 30 per cent. of the cases severe pain occurred on the day following the application, and on account of this disagreeable symptoms these tablets were abandoned and the following substituted :

Sublimate, 0.0075 gram ; Thymol, 0.0075gram.

These are applied in the same manner. The thymol being chiefly designed to prevent the sublimate being so rapidly absorbed, besides giving a greater permanency to the application, by reducing its solubility. Very seldom, so far, has pain followed the use of these tablets, while experiments out of the mouth show that they still possess sufficient penetrating power.

Another combination employed is :—

Sublimate, 0.005 gram ;
Thymol, 0.005 ,,
Tannin, 0.005 ,,

This combination is somewhat empirical, though the design of the tannin will be apparent to every one. The combination does not penetrate as rapidly as No. 2, and discolors the tooth more.

Cyanide of mercury has also been employed in combination with thymol, in the following form :

Cyanide of mercury, 0.0075 gram ;
Thymol, 0.0075 ,,

Also the salicylate of mercury in the same form. This I think deserving of a trial. Its sparing solubility justifies the belief that its action will be more permanent than that of sublimate. The sulphate of copper may be used in pure form, but it naturally causes serious discolouration of the tooth at the neck, and is also, I fear, too soluble to give permanent results, in pure form. More recently, I have directed my experiments toward the discovery of some substance which possesses the desired qualities without discolouring the tooth. Thus far I have obtained the best results from diaphtherin (oxychinaseptol), an antiseptic recently introduced by Emmerich. It may be applied in pure form. Among liquid antiseptics, the oil of cinnamon takes the first place, and I have much faith in its power to conserve the dead pulp. Like all the liquids, however, it is difficult to apply, and has, besides, the disagreeable quality of discolouring the tooth yellowish-brown. The combination which I have chiefly employed is that of sublimate and thymol.

There was not much discussion following this paper. Dr. F. Abbott, of New York, mentioned that he was utterly opposed to the use of arsenic in teeth, and stated that he usually filled roots with oxychloride of zinc containing a drop of $\frac{1}{2000}$ perchloride of mercury.

Dr. Cunningham supported Dr. Miller's statements.

4th day.—A paper was read by *J. M. Whitney*, of Honolulu, on

"AMONG THE ANCIENT HAWAIIANS."

After giving a resumè of the history and position of the Hawaiian Islands and pointing out first, that the native Hawaiian people, until within a hundred years, lived isolated and unknown to the great world, therefore their habits were simple and their wants and opportunities were few; second, their modes of burial were such that it is possible with comparative ease to obtain some knowledge of their primitive conditions. Mr. Whitney thought these people might afford light on the question as to whether or no dental disease is due to civilization. For this purpose he undertook a journey to the burial places, caves formed in the lava, formed by a lava stream flowing from some opening on the mountain side, cooling first on the surface, leaving the still flowing lava within to empty itself on the country below. He gave a graphic account of his journey, the interest of which was increased by the veneration and fear which the Hawaiians have for their dead. However, he collected some crania and presents his investigations as follows:—

We have been taught that primitive peoples, living in simple conditions, were in a great measure free from dental caries as we see it in the mouth of our patients, and that many of the forms of dental disease with which we have to contend were with them wholly unknown. This seems to me a mistaken teaching, as far as may be learned from these records. An exceptional opportunity of becoming acquainted with the crania of the ancient people of these islands during the twenty-four years of my residence here has convinced me that both in the case of those buried in the caves, and of those more recent in the sand, not more than twenty-five per cent. have been free from caries, irregularity, or disease. Indeed, I think I have discovered every form of dental disease known to our practice; dental caries in all its many types, necrosis of the teeth, erosion, alveolar abscess, pyorrhea alveolaris, disease of the antrum of Highmore, necrosis of the maxillary, ankylosis of the jaw, salivary calculus, etc. Here was a well-developed osseous system; the individual was trained to exercise of the kind that would develop every part of the structure. Living upon an abundance of the simplest yet the most nutritious and bone-developing foods that would not cling to the teeth, but would exercise and clean them, with not an element lacking required by our present knowledge, and yet the same dental disease which we suffer burdened the lives of the ancient Hawaiians. While this is true, I have been interested to find that the teeth of those who died before civilization had introduced to the people peculiar constitutional diseases, acid fruits and vegetables, fine flour, and varied foods, were much less seriously attacked by disease than afterwards. As a general statement the teeth would be found clean, and when caries existed it was here and there in teeth of both maxillaries and on both sides, but not so pervading as found in the more recent crania, or in the mouths especially of the young of the present time. We have often accounted for the irregularity of teeth found so commonly among Americans, by the mixture of races of which our nation is composed. We say that the wide teeth of the large jaw of one race, being crowded into the narrow jaw of another race with which it has mingled, would of necessity produce an irregular arch. But here is a people, isolated from all others for at least fourteen hundred years, with no admixture of races; yet irregularity of the teeth of both maxillaries was almost as common as it is among the mixed races of to-day. It would be difficult to give a good reason why a fixed type for the mouth of this people should not have existed a thousand years ago, and that all with rare exceptions should have been modeled from it, had nature designed that there should be absolute uniformity in her work. Among the crania I have examined I have noticed what seemed to be somewhat fixed as a type, that the teeth are set closely together and well rounded, and that the dense part of the enamel, near the cutting-edge or grinding-surface, strikes its fellow at that point, the whole being held firmly together by the buttressed third molar. Perhaps next to dental caries, the greatest source of oral disorders among these people was the irregularity of the third molar, often producing in them as serious consequences as with us of the present time; while its failure to erupt was nearly or quite as common as we find it in our daily practice. So that we cannot argue from these remains, at least, that the coming man is to be deprived of this useful organ. The relation of food and disease to the health of the dental organs is strongly brought out as we study the changes shown in the teeth of those buried in the oldest caves, and so down through the more recent burials in the sand; then of those who were the old people a quarter of a century ago, whose childhood was passed before civilization had touched their life-habits; and their grandchildren who are now in our schools. These children, as shown by actual examination, have but little better teeth than their white schoolfellows. Their fathers and mothers may have better teeth than the children, but it would be an exception if they had not been to the government physician and had one or more teeth removed for relief from odontalgia, while the grandparents, the old men and women whom I found when I first went to the islands, had teeth approximating those found in the old caves, though not as good. I lay much of this very great change to the many forms of disease that have weakened their constitution, to fine flour that has become a part of their diet, and, eaten in the form of crackers or hard bread, clings to the teeth; to the many acid fruits, such as tamarinds, guavas, limes, etc., to which they have constant access, and to spending their childhood and youth in the school-room instead of wading and swimming in the warm sea, eating raw the fish and shell-fish which they have caught, chewing sugar-cane, and stripping off with their teeth the fibrous covering of the cocoanut.

Also a paper by *Dr. Hayhurst*, of New Jersey, on the

"HISTORY OF DENTISTRY IN THE UNITED STATES."

5th day.—A paper was read by *John Girdwood, L.D.S.Edin.*, on

"ENGLISH TUBE TEETH, THEIR USES IN PLATE, CROWN AND BRIDGE-WORK."

This paper, which was illustrated by diagrams, dealt with the method of using and mounting tube teeth for various purposes, and it is with regret that, being pressed for space we are not able to give it *in extenso*, and we fear that it would suffer too seriously by abbreviation.

A second paper, by *Thos. Fillebrown*, was read on

"HYPNOTIC SUGGESTIONS AS AN OBTUNDENT AND SEDATIVE."

An interesting paper, from which we abstract the following paragraphs :—

For thirty years I have been familiar with the remedial effects of hypnotic suggestion, and was fully convinced that hypnotism would be eventually made valuable for use in dentistry, but it was not until I had made Bernheim's "Suggestive Therapeutics" an object of thorough study and reflection that the way opened for me to apply it for this purpose. My successful results were a joyful surprise to me, and have proved a great solace and relief to my patients since. And with me it is at the present time a well-recognized resource of relief for hypersensitive patients and a reliable obtundent for sensitive dentine. By its use I have rendered painfully sensitive dentine anesthetic and formed the cavity to my full satisfaction, all the while the patient being fully conscious of all that was going on and fully realizing the obtunding effect of the suggestion.

The sedative effects of suggestion have also proved most salutary and efficient, and in most cases relieving the patient entirely of the terror which is so often the greatest hinderance to a successful operation. Patients who for years have been unable to sit in a dental chair have had their fears removed and repeated operations performed without suffering, and at the close of each sitting have left the chair in a better condition, mentally and physicially, than after the previous visit.

While suggestion is not of universal application, yet summing up the favourable effects of the sensitiveness of the dentine and the very favorable sedative influence on the nervous system, it proves for me the most efficient dental obtundent that it has been my privilege to try. In my paper referred to, I reported an analysis of twenty-one cases showing my success. My subsequent experience has fully corroborated this favorable showing. The number of patients was twenty-one; one failed to hypnotize, consequently the summary applies to twenty patients. In every case I proved that the teeth were very sensitive. Hypnotic suggestion applied thirty-eight times to twenty patients. Full anesthesia of the dentine obtained twenty-one times for eight patients, or forty per cent, of the whole number of patients. Anesthesia of dentine not quite complete, but practically successful, twelve times for seven patients being thirty-five per cent. of the whole number of patients. Anesthesia completed with local obtundents six times to five patients, or twenty-five per cent. of the patients.

The average man can become a capable hypnotist, and at least three-fourths of the practitioners of dentistry may, by proper study and application make it exceedingly useful. I had occasion recently to instruct some young dentists in the art of hypnotizing; six sat down, two at a time as subjects, and another six became operators. Four of the operators were entirely successful, and fully hypnotized their subjects. The last two failed of complete success for lack of time, which caused a hurried feeling which is inimical to any approach to the hypnotic condition. Any one of good understanding and fair ability can use the elements of suggestion in a form taught by the Philosophy of Repose or the so-called devitalizing process. Several of my patients have attained to the power of auto-hypnotization by the practice of those methods, and have rendered their dental operations comparatively painless.

The condition itself is not in the least dangerous. The patient is put into a quiet sleep, being light or deep as the susceptibility of the subject may determine. The patient is comfortable and resting, and if left alone will usually in fifteen or twenty minutes wake spontaneously as from natural sleep. The hypnosis wears out. The patient may feel drowsy for some time longer, but soon returns to the former condition of wakefulness, but the quiet, calming influence of the hypnosis is sure to remain.

No sensible man will deny that harm may be done with hypnotic suggestion. There is " nothing good under the sun " which may not do harm or become evil by misuse.

In predisposed cases chloroform, ether, and gas have caused sickness, insanity and death. Yet every surgeon uses them, and every patient expects and desires them. Opium and alcohol are also dangerous, a thousand times more dangerous than suggestion.

No competent operator need have any fear for himself or his patient. Average ability, fair knowledge of the subject, and honesty are sufficient safeguards for both the operator and his patients. It is said the rash, foolish, and unprincipled may abuse it. True. But this is all the more reason why the conservative, wise, and high-minded physician should snatch it from such unworthy hands.

The induction of hypnosis is a simple and easy matter. I use the method which has proved so successful with the Nancy school and described substantially as follows by Bernheim :

" When I have banished from the patient's mind the idea of hypnotism and the somewhat mysterious fear that attaches to that unknown condition, above all when he has seen patients cured or benefitted by the means in question, he is no longer suspicious, but gives himself up. Then I say, ' Look at me and think of nothing but sleep. Your eyelids begin to feel heavy, your eyes are tired. They begin to wink, they are getting moist, you cannot see dis-tinctly. They are closed.' Some patients close their eyes and are asleep immediately. With others I have to repeat, lay more stress on what I say, and even make gestures. It makes little difference what sort of gesture is made. I hold two fingers of my right hand before the patient's eyes and ask him to look at them, or pass both hands before his eyes, or persuade him to fix his eyes upon mine, endeavoring at the same time to concentrate his attention upon the idea of sleep. I say, " Your lids are closing, you cannot open them again. Your arms feel heavy, so do your legs. You cannot feel anything. Your hands are motionless. You see nothing, you are going to sleep,' and I had in a commanding tone ' Sleep.' This word often turns the balance. The eyes close, and the patient sleeps or is at least influenced."

I have, I believe, verified all the phenomena observed by Bernheim as to the symptoms of hypnosis, and nearly all of his variations of methods of inducing it. I, myself, use my eyes more for a fixed point for the patient's gaze than the fingers. I find it more agreeable to the patient. It seems to them more sensible, and unless the operator is likely to be hypnotized himself it is, I think, the better. Laying my hand on the forehead and over the eyes to close them, and exclude the light, is very successful with me and much preferred by many and very often is more effectual. In these cases audible suggestion is used, the same as in others.

I find the fixation of the gaze much less necessary than formerly and now by no means essential. The awaking from the hypnotic sleep may be instantaneous. In my experience the patient will wake up from light sleep any time when I leave him for a moment, unless I particularly suggest a continuance of the sleep ; but the majority of subjects left to themselves sleep on for several minutes, for a half-hour or even one or more hours, when the sleep will terminate spontaneously.

For most patients the simple suggestion " Wake up " is quite sufficient to terminate the condition. Occasionally it may need to be repeated perhaps a little more emphatically. If the arousing is sluggish, fanning or blowing on the face is useful, with the command " Wake up " repeated. A slight shock, or a slap on the arm, will quicken the termination of the condition. No hypnotist of good technical knowledge has ever had any difficulty in arousing the patient from the hypnosis at will.

I maintain the hypnosis and the anæthesia by a constant repetition of " Sleep, sleep ; you are resting, you are not suffering, you are not dreading it, you do not care for it, sleep, sleep," and so on continuously as long as the condition is desired. It is practically a continual re-hypnotizing to offset the continual waking caused by the cut of the instrument.

Sometimes the hypnosis will wear out in spite of continual suggestion, especially if the operator's attention is too wholly absorbed in the operation and his suggestions become weak. In such a case I stop, and hypnotize again. I have hypnotized as many as six times at one sitting.

The physiology of any mental state or mental action is but little understood beyond a familiarity with the phenomena displayed. We are no better nor worse off with the hypnotic condition. The phenomena of hypnotism has been observed scientifically for more than one hundred years, and many facts established.

In hypnosis the power to initiate any volition is in abeyance. The mind will be directed from the old channels and follow a new line of thought ; it will exert its physiological force as directed by the operator.

The mind seems to become non-resistant, and old thoughts are held in abeyance and new thoughts are suggested and received to hold control, so that sometimes during a single hypnosis, a condition directly opposite to that which previously existed may gain permanent control. Courage may succeed fear, rest replace fatigue, and sweet natural sleep come to the patient instead of wakeful hours of restlessness.

The paper was amplified and illustrated by many interesting cases from the author's practice.

The *discussion* of this paper was taken in the section of anatomy and histology. Most of the speakers seemed to believe in hypnotism with Dr. Fillibrown, one, however (Dr. Mat Kellops), stated that he could take any patient, and by kindness and gentleness make him do anything he wishes without any hypnotism. This kindness Dr. Fillibrown preferred to call hypnotism. Some adverse comments were also made by various speakers expressing disbelief in hypnotism.

SECTION I.—ANATOMY AND HISTOLOGY.

2nd day.—Dr. R. R. ANDREWS was the chairman of this section, and delivered an introductory address, in which he claimed that members of the Dental profession occupied a position of honor among the ranks of professional men. He especially felt justly proud of the scientific work done by Tomes, Magitot and Miller.

A paper was read by *Dr. Bonwill*, of Philadelphia, entitled

"WHAT HAS DENTISTRY TO DEMONSTRATE AGAINST THE HYPOTHESIS OF ORGANIC EVOLUTION."

According to Dr. Bonwill's view the arrangement and proportions of the teeth found their basis in an equilateral triangle, and he argues that they must always have been formed on this plan, therefore, no progressive evolution could possibly have taken place in regard to the human teeth and the jaw, an equilateral triangle being and remaining always an equilateral triangle. The average jaw measures about four inches from the centre of each condyloid process to the median line at the cutting-edge between the interior central incisors. It is as long as five in many cases of the Indians and Malays, as well as some in all nations. The measurement must be taken from the lower jaw, as being the one of motion ; the upper has to be made to conform to the special forms and measurements of the lower. The centre of each condyle, being the centre of motion, rotating on one condyle only—the other describing the arc of a circle by moving forward in the glenoid cavity—is the proper point from which to measure the angle. The examination of 4,000 dead and at least 6,000 living jaws attest this assertion. The few cases where the angles do not hold true are among nations nations who compress the cranium. The human jaw, left to its own development, must always be an equilateral triangle, as is shown most beautifully and completely in all embryos from the period of formation of the lower jaw. The size of the arch of the lower jaw must be just one-twelfth of the main circle drawn round the equilateral triangular jaw, or the teeth could not be made to fill the space. And also to permit perfect lateral movement and action of all the grinders and cutting surfaces in common in masticating and incising. The mean diameter of the fourteen lower teeth, in line, measures the same as one line of the equilateral, when these fourteen teeth are thrown into a circle, they should completely fill that circle. The six incisors' mean diameter, in line, measures the same as the two bicuspids and two molars on either side, forming again an equilateral triangle. The six incisors of the lower jaw fill just one-third of the arch, the biscuspids and molars filling the remainder of the circle. As the arch of the six incisors is the one-twelth of the main circle, so it will be found absolutely correct that the one-twelfth of this smaller circle will give the width of the central incisors of the lower jaw, which shows why they should be the smallest of all the teeth. The grinding or masticating surfaces will be found to have the same absolute shape and curves, and each tooth surface varies in depth as you leave the incisors backward to the last molar. They have ever been and must always be so. The faces on all sides of each tooth in both upper and lower jaw vary as you find them in the arch. No one tooth can be substituted for another, they cannot be interchanged. There was considerable *discussion* on this question of a rather heated nature. Most speakers thought Dr. Bonwill had not made out his point with regard to evolution, though as regards the correctness of the measurements given by Dr. Bonwill several seemed to agree, Dr. Haskell, of Chicago, utilizing these measurements in the arrangement of an artificial denture.

3rd day.—A paper was read by *S. H. Guilford*, of Philadelphia, on

"TEETH AND HAIR."

After considering the development and biological relationship of hair and teeth, the author pointed out that with regard to correlated abnormalities of these tissues, in some instances deficiency of one product is accompanied by deficiency in the other, whereas in others deficiency of one is associated with redundancy of the other. Dr. Guilford then described an individual, forty-eight years of age, who had never had teeth, temporary or permanent. His head was nearly bald, being only slightly covered with fine down; and while hair was present in the pubic and axillary regions, the surface of his body was entirely lacking in the surface-hairs and lanugo usually present. Owing either to the absence or suppression of the sudoriparous glands, he had never perspired. In addition to these peculiarities, he had no sense of smell and very little sense of taste. He is still living and in good health, and of his six children only two (girls) show any signs of inherited abnormity, and then only in having about half the usual number of teeth. Another case is reported by M. Jarré, of Paris. The subject was a boy, twelve years of age, whose scalp had a scant covering of hair and whose body was entirely free from surface-hairs. His lower jaw was edentulous, and the upper jaw contained but five teeth. Of the second class, in which deficiency or abnormity of the teeth or jaws is associated with excessive development of the hair, there are several notable instances on record. One of these is the well-known case of Julia Pastrana. The hair upon her head was dark, coarse, and strong, while upon her cheeks and chin she wore a full beard several inches long. Her dentition was normal, as testified to by both M. Magitot and Sir John Tomes, who examined her mouth, but the alveolar and overlying soft tissues were hypertrophied to such an extent that only the coronal surfaces of the teeth were visible. Another case, mentioned by Parreidt, is that of Krao, an Indian girl seven years of age, who was exhibited in Europe some years ago. Her body was covered with a well-developed growth of hair, and her jaws presented a hypertrophied condition, her teeth being normal in number and form. A more remarkable example, in which an abnormal growth of hair was associated with a deficiency of teeth, is that of Fedor Jeftichejew, the so called dog-faced man, who has been exhibited the world over and whom your essayist had the privilege of examining less than a year ago. In his lower jaw there are three teeth, one cuspid and two incisors. In the upper jaw there are only two cuspids; one tooth, a lower incisor, having been extracted. His father Audrian, who possessed the same peculiarities, but who has since died. Fedor, now a man twenty-three years of age, has his entire body covered with a fair growth of hair, while upon his face, including the nose and forehead, there is a strong growth of soft hair several inches in length. In his case also the sudoriparous glands seems to be poorly developed, for he perspires but little. Still another case of excessive hair-development, associated with a more or less defective development of the dental organs, is found in the " Burmese Hairy Family," exhibited at various times in this country and Europe. Three members of this family, the grandfather, the mother, and Moung Phoset, the son, had their faces and bodies covered with long dark hair of a silky character. Their hands were not thus covered, but upon their foreheads, cheeks, noses, and ears the growth was excessively abundant. That upon the forehead of Moung Phoset was so long that it was parted in the middle and carried back and secured behind the head. The grandfather died in Ava, and was never on exhibition, but was seen and reported upon by Capt. Crawford, who states that " the hair on the face, ears, and nose was eight inches long, and on the breast and shoulders, four or five inches." As to the lack of teeth in these cases, writers differ in their accounts. Crawford says the mother lacked the cuspids and molars in each jaw ; a later writer speaks of her as lacking many of the teeth, but as a matter of fact, Dr. John A. Daly, of Washington, D.C., in 1888, removed no less than fifteen teeth from her jaws. Moung Phoset, the son, is reported as lacking many of his teeth, but this could neither be verified nor contradicted, inasmuch as the exhibitor in charge invariably refused to allow his mouth to be examined. Another source, showing the intimate relation of these tissues is that of ovarian cysts. In these there are usually found hair, teeth, alveolar tissue, and sometimes nails ; all products of the epiblastic and mesoblastic layers. The question naturally suggests itself, " Why should these two particular products of the epiderm so often be found to be conjointly affected ? " A satisfactory answer has never been and cannot now be given, but the consideration of two points may shed some little light on the subject. First, the development of the hair and teeth in the human embryo are more nearly contemporaneous than that of the other epidermoid tissues, the first covering of hair or lanugo being noticeable about the fourth month of fœtal life, and the formation of the dentine cap or calcification occurring, according to Magitot, at the same period. Second, the homology of the two structures is strikingly illustrated (*a*) in their being developed within a sac formed by the dipping down and infolding of the epithelium ; (*b*) in their being first formed and afterwards nourished by a papilla or follicle ; (*c*) in their limitation of growth ; (*d*) in their being shed and replaced, once or oftener, by structures of similar character ; and (*c*) in being so commonly found associated in dermoid cysts.

In the discussion which followed, Dr. Thompson mentioned a case in which, with absent teeth, there was little variation in the hair, except that the man was almost beardless. Regarding dentine as allied to bone, the speaker doubted the propriety of calling teeth as a whole "dermal structures."

Dr. Xavier Sudduth mentioned an individual who had temporary teeth faulty in form and quality coincident with the absence of hair over the greater part of the body. The permanent teeth developed normally as to number and quality. He held the fault lay in some nutrition disturbance about the sixth week of foetal life.

A paper was read by *Dr. Abbott*, entitled,

"TEETH OF THE LOWER JAW AT BIRTH."

4th day.—A paper was read by *A. H. Thompson* on

"THE PEDIGREE OF A CENTRAL INCISOR."

He looks upon the central incisor in man as unique, in that, whilst the other teeth may be said to have degraded in form, this has developed, being more highly specialized in man, as an effective cutting instrument, than in some of the lower forms. Teeth acting as cutting instruments are present in some of the invertebrata, but in fish and reptiles, with the exception perhaps of sargus, no true incisors are present. He notes the development of the incisors first in the insectivora, whilst in regard to the comb-like teeth of the little flying galeopithecus, produced by the deeper extension of the marginal notches into the crown, he notes that Professor Owen recognised the analogy of these notches to those found on human incisors. He then noticed the form of the incisors in the platyrrhine and catyrrhine monkeys, and proceeded to mention their form in the anthropomorphous types. There is little difference, he says, between the central in the higher apes and man, for it assumes the final shape long before man is reached, and most have taken on this form before the differentiation which separated the human branch from the quadrumanous.

Discussion.—In reply to a query, he thought, with Dr. Bonwill, that human teeth would degrade in form. As to whether this would chiefly affect the root or the crown would necessarily depend upon lessening function, which would lessen the impulse of development. He was inclined to retract his former opinion that man would eventually be toothless. Dr. Abbott was pleased to note this retraction of opinion, as he believed we stand just as good a chance of a good set of teeth to-day as we did thousands of years ago.

A paper was then read by *Dr. Eben N. Flagg* on

"THE HUMAN TEMPERAMENT IN ITS RELATION TO THE HUMAN TEETH."

In this paper he adhered to the classification published in the "Dental Cosmos," February, 1884, and he insisted on the need of recognising the different temperaments present in man in order that we might be ble to indicate beforehand, with more or less certainty, the character eof the dental trouble that the patient would be most likely to suffer from. He would look on these different varities of temperament, as not so much dependent upon man's surroundings, such as soil, climate, locality, habits of life, &c., as due chiefly to mental rather than physical causes. Darwin, he says, has abundantly demonstrated that the force of function tends to determine the form of the organ, while in every day life how often we notice that habits of mind can produce a change in the expression of the body, more certainly than mere habits of body can produce it in the mental constitution.

5th day.—The section was occupied in the discussion of Dr. Fillibrown's paper above alluded to.

SECTION II.—ETIOLOGY, PATHOLOGY AND BACTERIOLOGY.

Dr. BLACK in the Chair.

2nd day.—A paper was read by *Annie Felton Reynolds*, Boston on

"ADENOIDS."

After describing adenoids and the symptoms produced by them, the writer proceeded to state that there is a definite relation between these conditions and the V-shaped palatine arch, which has not been appreciated in considering the acquired causes of the irregularities of the teeth in children, and which should be emphasized. The high-arched palate always presents in typical cases of this complaint; moreover, it is one of the earliest mechanical results of obstructed nasal breathing. Mouth-breathing being unavoidable in these cases, a constant pressure of the air inside the buccal cavity gradually but surely forces the hard palate upward. From the simple vaulting of the palate in the very young it may go on to marked deformity of the jaw and great irregularity of the teeth ; the central incisors suffer most, being in some instances rotated so that they stand at almost a right angle to the jaw. Many a child has had healthy teeth extracted, and has worn for months an ingenious mechanical device for correcting a crowded and irregular denture, while atmospheric pressure was constantly working against the efforts of the dentist. Whereas, if the growths were first removed, the labors of the dentist would have been lessened. The time to operate is from the age of a few weeks, the earlier the better for the patient ; the operation is not difficult, and, properly performed, is not attended by danger to the child. The growths do not recur.

In the discussion the cause of "high palate" being due to atmospheric pressure was doubted. Dr. Fillibrown attributed the deformity to the action of gravity. The mouth being open would tend to bring the weight of the teeth down on the face laterally and to press them together. The high vault being not so much the elevation of the median line as it is depression of the sides. Dr. Talbot would not regard adenoids as a cause of dental deformity, but as being due, like them, to a degenerate or neurotic condition, neither being dependent upon the other. The so-called "high vault," he stated, was by no means as high as is met with in those having a perfect palate, it merely looks high because of the contracted V-shaped, or saddle-shaped, arch ; this contraction being an arrest of development.

A paper was read *Dr. P. Macarovici* on

"PULPITIS CHRONICA IDIOPATHICA."

This disease, usually called the formation of secondary dentine by us, may arise in three ways. First, as a nodular outgrowth towards the pulp, secondly, a total obliteration of the pulp cavity (the change generally begins adjacent to the crown, and is usually found in worn down or carious teeth), thirdly, by the formation of secondary dentine in the pulp itself, unattached to the walls of the pulp chamber. As an example of the third variety, he mentions the case of a lady who had pain at times in a tooth, spreading to half of the head and the face. This recurred on making rapid movements, the attacks being of short duration and ceasing suddenly. Later the attacks came on without violent movement, and were of longer duration. Examination revealed no carious cavity, nor did irrigation with cold water reveal anything. On one side a little tartar was adhering to two molars and one of these molars differed in colour slightly from the other teeth, and was very slightly movable. Extraction of this tooth left the lady entirely free from pain. The pulp was found to be ossefied, but unattached to the dentine, a little yellowish white fluid separating them. He looked upon Tomes' fibres as being nothing else than lymph which had become coagulated during the preparation of specimens. The tubules he believes decrease in size, and he thinks that hyperæmia brought on by undue exertion, violent movement, or other causes might cause obliteration of the tubules on the surface of the pulp. The mineral substance would be retained in the pulp, and might lead to new formations in it. He holds that the fluid nature of Tomes' fibres is proved by the formation of callus uniting the fragments of a fractured tooth.

Only one gentleman (Dr. Grevers) took part in the *discussion*, who regretted that that the paper made no reference to the Odontological Section of the Berlin Congress, nor having referred to the term "Odonthele" suggested by Professor Islay, of Budapest, as a name for hard formations present in the dental pulp.

3rd day.—A paper was read by *L. C. Ingersoll* on

"THE RELATION OF PREDISPOSING TO THE ACTIVE CAUSES OF DECAY."

In this paper the author raised the question:—Why should it be thought necessary to abandon a theory of decay by vegetable and mineral acids chemically produced, when accepting the theory of decay by acids produced by organic germs? He also argued that if there are predisposing conditions favoring decay, so there must be like conditions preventing it, *ex. gr.*, he says:—It is sometimes said that if teeth are only kept clean they will not decay. Yet, in the very face of this teaching, we find teeth that are kept clean to the extremest limit of practicability, decay early and rapidly; and on the other hand we find teeth that are never cleaned from month to month, retain their firmness of substance to a good old age, in spite of the microbe. I have known a case where, in the mouths of three generations, the same tooth, correspondingly, decayed after adult life, while the contiguous teeth remained firm. I have also known excrescenses to appear at the advanced period of life which in location and form were exact reproductions of what appeared on the person of the father when at the same age, showing that in the case of the son it was not produced by irritation, organic germs, or other external influence, but by inherited impress.

A paper was also read by *R. Finley Hunt*, Washington, on

"RUBBER SORE MOUTH."

Whilst admitting that the disease had been denied by some, maintained that the evidence does identify the pathological condition as a specific disease with distinct symptoms and characteristics, and does establish that it is caused by wearing vulcanized rubber in direct, constant, and adhesive contact with the mucous membrane in the mouth. Symptoms, stages and effects :—A low order of vitality in the parts covered by the plates ; a peculiar pallor of the same; irritation, swelling, redness, inflammation; congested, engorged, hyperæmic condition ; granulation,—granulated masses, like a strawberry, red, purple, scarlet, soft and spongy ; half the arch filled with a spongy mass ; blood oozing from the diseased parts ; turgidity of the vessels ; roof of the mouth like half-decayed raw beef cut across the grain ; suppurating, discharging condition, ulceration ; pus exuding from the folds ; sanguino-purulent fluid constantly exuding from the apertures in the palate over the necrosed bone ; sensitiveness so obtunded that no pain is felt, or in other cases, a burning, drawing, feverish sensation ; lines of inflammation extending to the throat, causing disagreeable tickling sensation, and annoying cough ; bronchial affections, chronic catarrh ; sloughing of the soft parts ; in some cases death. The evidence shows that when the lesions have not progressed too far, a cure has always been effected and a recurrence of the disease prevented in three ways, viz.: by discarding altogether the rubber plate ; by substituting for it a plate of gold, platinum, or even silver ; and by interposing permanently between the rubber and mucous membrane a foil or thin sheet of metal. When the last method has been applied, using ordinary metallic foil, the effect has not been permanent, because the mouth surface of the foil rubs off, leaving the rubber exposed. The virulence of the disease varies in different patients.

In the discussion Dr. Noble recommended the use of Daly gold lining with all rubber plates. Dr. Boyd regarded "rubber sore mouth" as being chiefly due to lack of fit of the denture. Dr. Nelson looked for the cause not in the rubber but in the ingredients in the rubber, red rubber especially. He recommended the use of black rubber. On the other hand Dr. Cooke stated that the worst case he had met with had been where black rubber was used, much worse than it had been under previously worn red rubber plates. Dr. Miller stated that he had replaced rubber plates with those made of celluloid with advantage. He believed that many cases were not due to the plate, but that the tissues of the mouth were liable to trouble just as other portions of the body were. Dr. Patterson thought there was no such disease, the first and prime cause being uncleanliness. A rubber plate polished inside as well as out he regarded as being equal to a gold one.

4th day.—A paper was read by *Dr. J. P. Wilson* on

"THE PATHOLOGICAL CONDITIONS OF THE AIR CAVITIES OF THE CRANIUM RESULTING FROM DENTAL LESION."

He looks upon nasal catarrh as usually being a manifestation of pathological conditions of these cavities, and although in some cases the origin of the disease may be uncertain, in the cases of disease of the antrum it was often due to an abscess on the root of a molar tooth. The escape of septic matter through the opening made by the abscess would soon contaminate the rest of the mucous membrane of that cavity, and after polluting the antrum must pass into the meatus of the nose. To illustrate this point he mentioned a case in which antral trouble had been caused by a second bicuspid and first molar, both of which had been filled many years before. On examination of these an opening was found leading into the antrum, and through this opening the antrum was subsequently treated by washing with warm water and antiseptic solutions. In this case there was a complete and rapid recovery, but he thought that, in patients of a scrofulous diathesis, a more persistent course of treatment would have been required, and the result would have been a greater uncertainty. On tracing these cases he found that an aching tooth was often Nature's first signal, followed by inflammation and swelling of the face, and, after the acute disease subsides, by a catarrhal discharge from the nose. As a result of the irritation of these discharges in the antrum, morbid growths often arise from its mucous membrane, nasal polypus for instance usually commences in or near the outlet of the antrum, the opening into the nose being often obstructed by this. The mechanical obstruction thus produced must be regarded not as the cause but as the result of the antral disease.

In the discussion, Dr. Abbott thought that having regard to the extremely sensitive mucous membrane lining this cavity, greater care should be exercised in not using too strong solutions of antiseptics, indeed, he states that an antiseptic used with the idea of destroying the disease may actually produce more trouble than there was before. He would emphasize the fact that cleanliness is the great desideratum, and that for this purpose plain water often suffices. Dr. Davis mentioned a case in which a cerebral abscess, causing death, had resulted from nasal catarrh. Several other speakers mentioned antral cases they had met with, the subject was passed, and a *discussion* followed on the question "CAN APICAL PERICEMENTITIES OCCUR IN CONNECTION WITH ROOTS WHICH HAVE BEEN PERFECTLY STERILIZED AND FILLED, AND IF SO, UNDER WHAT CIRCUMSTANCES ?" Dr. A. O. Rawls expressed his belief that if you filled the canal up to the extremity in all probability you would have done all that is possible to prevent pericementities, but the difficulty occurred in doing this. By desiccating the pulp cavity by means of a hot air syringe, then applying an ethereal solution, such as varnish or something of that kind, this might be done. Dr. Wilson stated that owing to the extreme apex of the tooth being formed by cementum it was connected directly to the pulp, if now arsenic be applied more than once to destroy the nerve we may not only destroy its main body but actually the cementum at the apex of the tooth, which being dead then acts as a foreign body. Although a long period may elapse after this without any real pain, there will probably be some subsequent trouble. Dr. Fernandez wished we were able to do without arsenic in destroying pulps, and he thought some mechanical means should be adopted. He would give an anæsthetic for this purpose just as he would for the extraction of a tooth. After applying the devitalizing agent he endeavoured to desiccate the pulp by the use of tannic acid solution in glycerol. If portions still remained alive he digested them with a solution of pepsine.

5th day.—A paper was read by *Vida A. Latham*, of Chicago, on

"PALATIAL DISEASES."

The author gave details of a number of cases of tumours of the palate, one was of interest, the tumour being apparently the result of irritation produced by a partial lower plate, the teeth of which worried the hard palate near the alveolus to the right of the median line; on microscopical examination the tumour proved to be a spindle-celled sarcoma originating in the periosteum.

A paper was read by *L. van Orden*, of San Francisco, on

"THE RELATIONSHIP OF DENTAL INTER-ARTICULATION, WITH MORE OR LESS OBSCURE PAINS ABOUT THE FACE AND JAW."

The cases detailed by the writer all showed such obscure pains, cured by relieving the pressure on the tooth by grinding the articulating surfaces, and in all there have been a previous extraction of teeth. He sums up as follows: The main benefit that the writer has derived from the observation of these and other cases has been the conviction that the extraction of one or more teeth, especially of the inferior first molars, is liable, sooner or later, to lead to discomfort in some of the remaining teeth, and that such discomfort may, with patience, be located and relieved by the use of an engine-stone.

SECTION III.—CHEMISTRY AND METALLURGY.

A paper was read by *Dr. Lockwood*, on the

"STUDY OF CHEMISTRY IN DENTISTRY,"

in which he recommended the study of chemistry to all dental students. No other meeting of this section was held.

SECTION IV.—THERAPEUTICS AND MATERIA MEDICA.

Dr. F. J. S. GORGAS, of Baltimore, in the Chair.

2nd day.—A paper was read by *D. Caracatsanis*, Athens, on

"METHOD OF INDUCING LOCAL ANÆSTHESIA BY COCAIN."

The author, feeling that cocain anæsthesia, if completely localized, would be perfectly satisfactory, originated the following method, which he described. Painting the gum, next the tooth to be extracted with a steel instrument wrapped in cotton dipped in a solution of phenic acid, 2 to 1,000, which has been heated. This is followed by the application of the salt of cocain by means of a pledget of cotton impregnated therewith. When the gum shows signs of insensibility, separate it slowly from the tooth by means of a bistoury and fill the space with pledgets of cotton impregnated with cocain. As the anesthesia advances, enlarge the opening to a depth of about one centimeter, on the buccal as well as on the lingual surface. Direct the patient to abstain from swallowing the saliva, to avoid all absorption of cocain, and take good care not to forget the cotton pledgets placed between the gum and the tooth.

Now spray the parts with a mixture composed as follows:—Chloroform, 25 grams; Sulphuric ether, 40 grams; Menthol, 3 grams; Cocain, 1 gram; Essence of Mint, 1 gram; and extract while the parts are being sprayed. The resulting anesthesia is complete.

In the discussion Dr. Roberts regarded tropa-cocaine as far superior to cocaine for hypodermic injections, producing longer and more complete anaesthesia without symptoms.

A further paper was read by *Anthony Bleichsteiner*, of Graz, Austria, on

"COCAIN INJECTIONS."

As a result of experience gained in 14,000 injections, the writer now uses a 3 per cent. solution of cocain, which he keeps prepared as follows: Take ten grams of sublimate solution, containing one gram of sublimate to 5,000 grams of distilled water, and dissolved in it three decigrams of hydrochlorate of cocain. In injecting hold the syringe after the manner of a writing pen, and force it between periosteum and the socket. At this place the injection fluid is pressed by the tension of the periosteum into the bone tissues of the alveolar wall, and from there into the periosteum. The injection proves to be successful by the gums growing more and more pale, and the formation of a transparent circumscribed blister, which resembles very much a ranula swelling. He uses horizontal punctures first, followed if need be by vertical ones. He does not wait but proceeds at once with the extraction. Intoxications after cocain injections only occur in his experience if 20 or 10 per cent. solutions half or even a whole syringe-full has been injected. In this case, if the solution be twenty per cent., either one decigram or two decigrams of cocain hydrochlorate has been injected; but with ten per cent. solutions, five centigrams or one decigram of cocain. These are doses which are too high under all circumstances. Since using three per cent. solutions, the accidents answered more the species of reflex actions. He has rarely injected fifty milligrams—that is, the whole contents of a syringe—and it may be that at one or another time too little was injected, and so with very nervous persons these nervous spasms may have been caused by a feeling of pain from the extraction. That feelings of pain with nervous persons can be the cause of the reflex symptoms has often been proved. He remembered a case when three sound and firmly fixed teeth were extracted for a very nervous elderly lady at one sitting.

After an injection of two syringes and a half of a five per cent. solution, one hundred and twenty-five milligrams of cocain hydrochlorate, not the slightest bad consequences were to be noticed. Two days later he wished to remove a very loose root of a central incisor for this same lady, and he injected only two drops of five per cent. solution, that is to say ten milligrams, and the patient had a bad attack of syncope. This was probably hysterical, as the patient having borne the large dose previously it could hardly be due to the drug.

In the discussion Dr. Roberts recommended so injecting that the blood shall be forced out of the blood vessels.

Dr. PRUYN detailed some experiments he was in the habit of conducting before his class. He takes a pair of dogs, and injects into one sufficient cocaine to kill him ; the dog goes through all the usual toxicological effects. The other, previously injected with morphia, is also injected with a dose of cocaine equal to that given to the previous dog, and invariably the animal's life is saved. Cocaine paralyses the centres of respiration. The animal struggles, then has tetanic paroxysmal exacerbations, followed by a cessation of the struggles, but finally he dies in a tetanic spasm. He advocated the addition to cocaine of half per cent. solution of salicylic acid to preserve it. Several speakers mentioned having used hot water instead of cocaine with equally good results. The use of cocaine was also advocated before operating for pyorrhea alveolaris also previously to applying rubber dam. The addition of saccharine was also advocated to cover the disagreeably bitter taste of the drug. Dr. Rose, after rubbing cocaine with a drop of carbolic acid, touches an exposed nerve with this and has been able to extract nerves so treated painlessly. Dr. Hewitt recommended the use of glycerine for this purpose instead of carbolic acid. Dr. Pruyn had had best results when the patient has had a full meal, toxic effects being much more marked when used upon an empty stomach.

A paper was read by *W. C. Davis* on

"OBTUNDING THE SENSIBILITY OF DENTINE."

The object is best attained, in the writer's opinion, by coagulating the dentinal fibres and filling the tubules, he proceeds as follows :—After applying absolute alcohol, an agent not in itself injurious to the dentine or pulp, but which has a great affinity for moisture, of which protoplasm is very largely composed, hot air is then applied, it will thoroughly vaporize the alcohol, carrying away the moisture it has abstracted from the tubuli, leaving them empty. To whatever distance they have been emptied, to that distance we have destroyed the medium for transmitting pain. Fill the tubuli with a resinous gum in suspension in a volatile oil. Almost any one of the essential oils will answer the purpose, as they are composed of volatile oils and the resinous gum, which we need. Probably nothing works better than oil of cassia, as upon the application of hot air the oils are easily volatilized, and if it has been diluted slightly with alcohol, it will readily go into the tubuli as far as they are empty, leaving its gum to fill the space. To this distance you can excavate with impunity ; consequently the success of the operation will depend upon the thoroughness with which you extract the protoplasm. In teeth of some structure, it seems to be readily extracted to a considerable depth ; in others it is next to impossible. This may depend on the size of the tubuli, but products of degeneration, &c., are apt to choke them and hinder the drying and filling process. When this method fails, the writer advocates administering gas, with ether, to which four or five drops of nitrate of amyl has been added. The anesthesia from the gas and ether soon passes away, leaving the patient semi-conscious, with the power of conversing with the operator and seemingly capable of realizing all that is going on ; but there seems to be a temporary paralysis of the fifth nerve, especially the third division, lasting from ten to fifteen minutes, sometimes twenty. It is well known that a few inhalations of nitrate of amyl will give speedy and temporary relief to neuralgia ; there seems to be dilation of the capillaries in the parts supplied by the fifth nerve, this drug seems to have a special action on the fifth nerve.

3rd day.—*The discussion* on cocaine was continued. Dr. Hewitt stated that before passing gilling twine around teeth he used a compound cocaine pigment having the following ingredients: Atropin, $\frac{1}{10}$ gr. ; Stropanthin, $\frac{1}{5}$ gr. ; Hydrochlorate of cocaine, 120 grs : Hydrate of naphthol, 10 grs. ; Oil of cloves, 2 drachms ; Chloroform, 2 drachms ; Oil of cassia, 2 drachms ; Glycerine, 1 drachm. The strophantine acts as a heart tonic and the naphthol as an antiseptic. He adds glycerine to a solution of cocaine to make it keep. Dr. Rhein deprecated the use of cocaine except in neurasthenic patients whose system is not anæmic. He thought that there was a large percentage of patients who did not care for "painless dentistry" in the ordinary sense of the word; they did not mind operations if they were done with a reasonable amount of care. Dr. Lowery advised injecting cocaine into the hard gum tissue, but thought if injected into muscles it was very likely to be carried into circulation *en masse*, and produced heart excitation and sometimes nausea. Dr. Bigelow damped a portion of cotton wool, and so applied powdered cocaine to the gum. Dr. Hoff objected to the prescription of Dr. Hewitt, which he said contained 20 per cent. of cocaine, which was, he thought, too great a proportion to be applied indiscriminately. In reply, Dr. Hewitt stated that he had used the pigment on all sorts of patients for a long time without the slightest toxic effect.

A paper was read by *Hedwig B. Stahlberg*, of Helsingfors, Finland, on

"ETHYL-CHLORIDE AS A LOCAL ANÆSTHETIC."

The author spoke well of his experience with the drug. He applied it directly on the gingiva and to the immediate neighbourhood of the root or roots of the tooth to be extracted, and he emphasizes the necessity of carefully covering the parts of the mouth not to be touched by this agent, because if saliva reaches the locality to be anæsthetized it not only retards the anæsthesia, but often renders it impossible.

In the discussion Dr. Rhein expressed a preference for chloride of methyl, which is much more rapid in its action, and produces a much lower temperature than chloride of ethyl.

A paper was read by *J. Caracatsanis*, of Athens, on

"TREATMENT OF ALVEOLAR PYORRHEA."

For purposes of treatment the writer divides the disease into four stages: firstly, when the suppuration extends only to neck of tooth; secondly, when the membrane is partly affected; thirdly, all cement and periosteum affected; and, fourthly, teeth altogether loose. In the first stage, remove tatar, etc., scarify gums, and apply tincture of iodin and tincture of aconite, equal quantities. The patient is directed to cleanse the mouth thrice daily with a brush and the following antiseptic lotion:—

Tincture of thyme, two grams.
,, ,, eucalyptus, 1 gram.
,, ,, benzoin, 4 grams.
,, ,, mint, 120 grams.
Tincture of lavender, 2 grams.
,, ,, rosemary, 1 gram.
,, ,, cologne, 1 gram.
,, ,, anise, 4 grams.

Sig.—One teaspoonful in half a glass of water.

In the second stage treatment is the same, but takes two to three months; third stage, the visits must be more numerous, and the strength of the sublimate solution to be increased to 2 to 1,000. After scarifying the gums by means of a bistoury, introduce with a Pravaz syringe the sublimate solution between the tooth and the gum, and at once apply the iodin and aconite preparation. If there be inflammation and the patient suffers pain, after removing the tartar use emollients. In the fourth stage satisfactory result is rarely obtained.

4th day.—A paper was read by *Dr. Fillibrown* on

"A NEW APPARATUS FOR MAINTAINING ANÆSTHESIA WITHOUT A FACEPIECE, AND WITH THE MOUTH OPEN."

The apparatus consisted of a bellows, connected by rubber tubing with the long tube of a twelve-ounce wash bottle, with a stop-cock intervening to regulate the flow of air. From the bottle extends a half-inch rubber tube to the patient. The bottle is filled one-third full of ether. The bellows is inflated and the stop-cock opened so as to allow the air to bubble up freely through the ether, and to become saturated with ether vapour. The etherized air is then discharged through the second tube a few inches from the patient's face. This apparatus, while maintaining anæsthesia for any length of time, did not interfere at all with operations about the mouth, nor would the surplus vapour discharged into the air sensibly affect either the operator or the assistant. To do away with the patient re-breathing the same atmosphere he attached to the discharge tube a double valve facepiece, such as is used when administering nitrous oxide, and a double ended gas bag for a reservoir. He first fills the bag with pure air, and by slowly injecting the etherized air narcosis is easily induced without any of the disagreeable symptoms usually experienced.

In *the discussion* Dr. Fillibrown stated that he did not produce anæthesia more quickly by this method, but could control the strength of the vapour so perfectly that there was scarcely any coughing and much less emesis. Dr. Cravens thought that coughing could be done away with by letting the patient inhale the anæsthetic through the nose.

A discussion on Pyorrhea Alveolaris followed. Dr. Barton would suggest that in the third and fourth stages the teeth should be maintained immovable by ligatures. Dr. Truman objected to scarifying the gums, since if it be a disease of the per-cementum so treating the gums would have no effect on the disease, and he did not see the use of using iodine of aconite. He thought a mistake was often made in regarding such cases as cured after six or seven weeks, whereas patients should really be continuously treated for the rest of their life. Dr. Craven briefly outlined the treatment he adopted. He first scrapes the root of the tooth, after applying a local anæsthetic, then, after washing the pockets out with hot water, he applies sulphuric acid, 1 to 10 of water, both with a syringe and with a common quill tooth-pick. At the second visit he again washes the pockets with hot water, and then applies a 10 per cent. solution of nitrate of silver. The third visit, after washing with hot water again, he uses a fairly strong solution of bromide chloralum. Four or five days intervene between each visit, and after the third visit he lets the patient return every one, two, or three weeks to have the pockets washed with hot water and bromide chloral of alum, diluted 1 to 5 or 6, applied. Dr. Harrow had tried this treatment with success. Dr. Hart stated that he began his treatment with bi-chloride of chinoidin. He then fits a band of No. 60 gold right up under the gum as far as the disease has gone, this encircles the tooth on the other side also, and is firmly cemented in position. All calculus matter is, of course, removed, and after fixing the gold the disease usually seems to stop. Dr. Rawls contends that the original cause of this condition is either inherited or acquired, and is the result of the use of mercury, often inherited from two or three generations. He thought that there was no special mendicament that is better than a perfect surgical operation, nor did he think that the application of any mendicament two or three times would give a successful issue in all cases. Many cases called typical Pyorrhea Alveolaris are often nothing more than the result of uncleanliness and negligence, and the accumulation of tartar around the tooth. Dr. Hoff believed that the disease was systematic and not local, and that all these patients are troubled with diseases, especially in the eliminating organs of the body. He mentioned a patient that he had treated substantially after the method adopted by Dr. Craven for several years. He could only retard the progress of the disease but could not effect a cure. He subsequently found that this patient was suffering from a constitutional complaint. After a time the man gave up business, went south and bought an orange grove in Florida, living and working in the open air. He returned the following summer, when all the other symptoms except recession of gums had disappeared. Dr. Gilmour, though agreeing that the disease was local and constitutional, thought that the active agent inducing the disease was always in the first place a local irritant. If there was a low vitality such a condition of the teeth would at once set up the disease. He thought that if there was anything in the theory that the disease was due to a local irritant applied at the end of the fibres of the root membrane until these were inflamed, then the first treatment should be to render the cavity thoroughly asceptic and remove all irritants.

5th day.—A paper was read by *Cary M. Stewart* on

"EXPERIMENTS WITH BI-CHLORIDE OF MERCURY."

When this drug is brought into contact with albumen it is superficially coagulated. It has been urged that when brought into contact with germs the same effect is produced, the superficial capsule preventing the drug from acting upon the internal vital portion He detailed some experiments with this drug.

A paper was read by *Prof. Barry* on

"THE TREATMENT OF ABSCESS ON THE MAXILLARY SINUS."

After having opened the antrum through an extraction wound he washes it out carefully with peri-oxide of hydrogen, and then injected chlorid of zinc, 1 gram ; phenic acid, 5 grams ; distilled water, 100 grams. In order to keep the fistula open, he places a little silk string saturated with wax ; and if, as rarely occurs, it will not close up, he takes a small pencil of gutta-percha, which he saturates with a little chlorid of zinc, place it for twenty-four hours inside of the fistula, and the edges close up by deep cicatrization very rapidly.

A paper was next read by *Dr. Dennis*, of Paris, on

"BORACINE."

This is a salt resulting from the combination of equal parts of borax and boric acid. It is neither caustic, toxic, nor irritating. It is also tasteless and odourless, and dissolves in a proportion of 16 per cent. For disinfecting dentinal tubulii the author did not substitute it for the different antiseptics already known, but in the treatment of mucous membrane he had had astonishing results. He detailed a case of an abscess from a molar, which healed exceedingly quickly which he had treated by putting a spoonful of pulverized boracine in the wound of the sinus and by washings with the drug in solution. He also detailed the case of an abscess due to a sequestrum caused by the extraction of a tooth. He says that as a daily antiseptic its use is plainly indicated against putrefaction of food particles which remain in the interstices of the teeth, causing such favourable elements for the growth of buccal microbes.

SECTION V.—DENTAL AND AURAL SURGERY.

Dr. BROPHY in the chair.

2nd day.—A paper was read by *Dr. M. H. Chymer*, on

"SURGICAL ENGINE AND ITS USES."

He pointed out the difference between this engine and the dental one, and enumerated the uses to which it could be put in general surgery, amongst others the opening of cloacae for the removal of sequestra, also for the removal of caries of bone and osteomata, and cutting away bone for the re-section of nerves. He instanced a case of persistent neuralgia, in which after repeated operations, during which the surgical engine proved exceedingly useful, it was necessary to remove the nerve as close as possible to the foramen ovale, and in order to reach the nerve in this position the sigmoid notch was deepened by a barrel-shaped engine burr. In this instance two large and distinct neuromata were found upon the nerve, the lower one being impinged upon the triangle process of bone at the opening of the inferior dental foramen; the upper one was under the external pterygoid muscle. The surgical engine made by White's ten years ago has a heavier and stronger arm and cable than its dental colleague, the handpiece is larger and takes the shaft of an instrument about twice the thickness and length of the ordinary dental bur, the tool is held in place by a latch-like bolt, which cannot come unfastened accidentally. Unfortunately this machine is not adapted for heavy work, and Dr. Cryer in consultation with Mr. C. Doriot has designed a new one, similar in appearance to the Bonwill, but much stronger.

In the discussion, the author of the paper maintained, that it was better to cut a nerve in section operations than to adopt the method of avulsion, as Dr. Marshall stated he preferred to do. Dr. Cryer maintained that there was less after pain if the nerve was cut than if it was torn.

3rd day.—A paper was read by *Dr. Brophy* on

"STAPHYLORRHAPHY."

He prefers to operate first on the hard palate, and, when this is united, to attempt union on the soft palate. He described the operation, which consisted in paring down the edges and forcing the two sides of the superior maxillary bone together, retaining them in place by means of sutures fastened with beads, the sides of the arch being so reduced, and the tension of the muscles relieved. He stated that the germs of the teeth are disturbed during the process, the teeth erupting later being imperfectly formed. He entered a protest against division of the tensor palati muscles, he preferred to pass a wire round the borders of the tensor palati, as this winds round the hamular process of the palate bone, and fixing the loop with a large bead resting upon the visible surface of the hard palate, directly over the muscle. The wire passes through the bead, and is carried also to the opposite side, and thus pressure is brought to bear upon the fibres of the muscles, and so temporarily paralyzes it, and removes the tension. After the process of repair is complete, the tension suture is removed, and the muscle resumes its activity.

In the discussion, Dr. Barrett approved of Dr. Brophy's method of operating, he had watched a number of operations, and the result seemed to him marvellous. Dr. Brophy stated that he preferred to do this operation whilst the patient was young, as the breaking up for the antagonism of the teeth presented a difficulty later in life.

4th day.—A paper was read by *Dr. Louis Ottofy*, on

"The History and Present Status on Transplantation of Dental Tissues."

He quoted a case performed by M. Witzel, which is published in the "*Vierteljahrsschrift für Zahnheilkunde*" for October, 1881, and he also mentioned that Dr. Bogue had heard in 1885 of an operation performed in Paris two years previously, in which teeth had been implanted in artificially prepared sockets. This, he stated, was previous to Dr. Younger re-introducing the subject to the members of the United States. With regard to the operation, he remarked that he regarded implantation as a legitimate operation in oral surgery, but it should be classed, like all other dental operations, as one of a more or less transitory character. When successful he believed the operation could not be excelled by any other in the science of dentistry, but thought suitable cases should be selected.

In the discussion, Dr. Lester said that the tendency of loss by absorption of the root was so great that unless it could be overcome there was no future for implantation. Dr. Younger mentioned that he had recently heard from a lady in Paris, for whom he implanted five teeth over eight years ago, and she reported that they were now perfect. He stated that he principally used strings to hold the teeth in place, but occasionally employed a small gold plate. He also mentioned two distinct cases in which he had implanted teeth not covered by per-cementum, meeting in each case with failure, but in repeated operations with teeth having a membrane success was obtained. He thinks he averages 20 per cent of failures. Dr. Barrett, whilst recognising the importance of having the teeth covered with per-cementum, could not believe there was any persistence of life in the periosteum after the teeth had been entirely desiccated, he believed that there was rather a re-production of periosteum or peri-cementum.

5th day.—There was a short discussion on

"EXCISION OF THE INFERIOR MAXILLA."

SECTION VI.—OPERATIVE DENTISTRY.

Dr. WILLIAM JARVIE in the chair.

2nd day. A paper was read by *H. L. Ambler*, Cleveland, on

"TIN FOIL FOR FILLING TEETH."

After referring to the improvement in its manufacture, the writer claimed that tin foil can be built up into a good solid plug, though not so hard as gold. It is a good material for filling many cavities in temporary teeth, and children will bear having it used, because it can be done quickly and does not require much mallet or hand force. Up to the age of fourteen, or longer, we find many teeth which are quite chalky, with the oral fluids in such a condition that oxychlorid and oxyphosphate do not last long, and for some reason amalgam and gutta-percha soon fail. In all such cases he recommends tin, even in the incisors, for as the patient advances in years the tooth structure generally becomes more dense, and if desirable the filling can be removed, and good saving operations made with gold. Approximal cavities in young teeth, filled with cohesive gold by good operators, often fail in one or two years, but refilled with tin the teeth are preserved. In approximal cavities attacked by white decay, the most formidable variety known, we would separate freely from the palatal or lingual side and fill carefully with tin. He *often* finds the dentine beneath fillings which have been removed, considerably discoloured, and greatly solidified as compared to its former condition, and he believes this condensation, or calcification, is more frequent under tin than gold. Instruments with square ends and sides, and medium serrations, are best adapted for hand force, and the majority of mediumly serrated hand mallet instruments will work well on No. 10 tin of one, two or three layers using a four-ounce mallet with a fair, steady blow ; but the force of blow will be guided by practice, thickness of tin, size of instrument, and depth of serrations. You must have absolute dryness and use care, not thinking because it is *tin* that it will be all right anyway. Fold the tin into strips of different widths, thicknesses, and lengths, according to size and location of cavity, but for a large crown or approximal cavity, the strips may be folded into mats or rolled into cylinders ; but as more force is required to condense them, we generally prefer strips for frail teeth. To make the most *pliable* cylinders, cut a strip of any desired width from a sheet of foil and roll it on a broach, cutting it off to make cylinders of different thicknesses, when the cavity is full, go over the tin thoroughly with mallet or hand force, cutting down crown fillings with burs or corundum-wheels, and approximal fillings with sharp instruments, emery strips or disks. After partially finishing, give the filling another condensing with the burnisher, then a final trimming and moderate burnishing. By trimming fillings before they get wet, you can remedy any defects with a sharply-serrated plugger and thin strip of tin as easily as with gold. Generally cavities are prepared the same as for gold, except that the grooves or pits should be a trifle larger ; but usually he cuts the cervical margin down to a smooth strong edge, even if it goes beyond the gum or enamel margin. Now cut a *slight* groove across far enough from the margin so that it will not be broken out, make each end of this groove square or with *slight* pits, then from each pit cut a groove which will extend to the masticating surface. In nearly all approximal cavities in bicuspids and molars you will find some form of matrix of great advantage. He had sometimes filled incisors and cuspid approximal cavities along the labial margin with gold when the tooth was of medium structure.

In the discussion, Dr. Darby pointed out that there was nothing new in the use of tin, as it almost anti-dates that of gold. The French first used lead, and then tin. Tin was used in 1800, in the United States, almost to the exclusion of every other metal. He believed that if the dental profession would use more tin they would save more teeth, the only objection being its colour, Many speakers endorsed the use of tin for children's teeth. Dr. St. George Elliott mentioned that tin and gold in certain proportions practically combined, so that you got not only hardness but a certain amount of expansion, which is of great value for filling crown cavities in molars. Professor Jas. Trueman advocated the use of tin instead of amalgam. He cited a remark of Dr. Jenkin's, of Dresden, " I cannot, as some other men do, preserve the cervical border of teeth with gold, and therefore I invariably use tin and gold." Professor Trueman also said that in working gold and tin there seemed no objection to the access of moisture, it seemed rather to favour the production of hardness, possibly by galvanic action.

3rd day. *Dr. Emil Schreier*, of Vienna, read a paper on the

"TREATMENT OF INFECTED ROOTS WITH KALIUM-NATRIUM."

He did not remove the contents of root canals, nor endeavour to cleanse them before introducing the kalium-natrium in a metallic state on a needle. The contents of the canal were decomposed and a considerable amount of heat liberated, potassium and sodium hydroxoids are formed, which, combining with the fat present, form soaps. The bacteria present are destroyed, partly by the heat produced and partly by the new products formed. He does not fear forcing septic matter through the apex, as this would necessarily travel in the direction of least resistance, *i.e.*, towards the pulp cavity, welling up alongside the needle. The contents of the pulp canal are readily removed afterwards in a coagulated state by a nerve needle. He washes out the canal with water, preferring a weak solution of carbolic acid, and then wipes out the remaining particles with a few fibres of cotton wool wrapped round a brooch.

In the discussion, Dr. Brockway mentioned that he had tried this preparation, and did not think the formation of heat was any drawback. In one instance he had a pyrotechnic display caused by using too great a quantity and by inadvertently getting a drop of water on it. Though personally startled, his patient was unaware of the circumstance, his mouth being covered with rubber-dam. Dr. Schreier stated that the proportion of sodium and potassium was not a fixed one, but was about two to one, prepared so as to adhere to the nerve brooch.

A paper was read by *W. B. Ames*, Chicago, on

"OXY-PHOSPHATES."

All cements known to me at present, with two exceptions, the acid is intended to be either pure ortho-phosphoric or an ortho-phosphoric acid solution of alkaline phosphates. The exceptions are Poulson's mineral plombe, and the variety of Harvard cement, which is furnished with crystallized acid. In the cements the acids are of the pyro-phosphoric variety. Extensive endeavours to utilize pyro-phosphoric acid had led me to consider it impractical and unreliable. An occasional specimen will be all that could be desired, but the impossibility of duplicating it with any degree of exactness precludes any reliance on this variety of acid. Meta-phosphoric acid can only be utilized by converting it into ortho-phosphoric by boiling it with an excess of water. Of this large majority of oxyphosphate cement liquids of which I have spoken, viz : those consisting of ortho-phosphoric acid, pure or adulterated, a very few only are unadulterated. In a very large majority of these the working properties of the cement have been modified by making an acid solution of an alkaline phosphate, or by using the glacial meta-phosphoric acid from which to make the ortho-phosphoric. This glacial acid is usually made from sodium phosphate, and retains a considerable quantity of this compound on which depends its glassy nature, pure meta-phosphoric acid being of a softer nature. In either case the result is the same. Any oxyphosphate cement, in which such an adulterated acid is used, is inferior to one in which pure ortho phosphoric acid is used under proper conditions. While the adulteration gives some desirable working qualities, it detracts from the definite crystallization, and remains in the hardened mass as a soluble material, and necessarily renders the cement less permanent. The alkaline phosphates are all soluble in water, and these are the only phosphates which will remain in solution in phosphoric acid for any considerable time. All metallic phosphates in such solution will in time recrystallize partly or wholly, which precludes their use for purpose of modifying the working properties of cements. The object accomplished by the addition of prosphates to phosphoric acid is in cement to retard the setting and render it less caustic. The cements in which I believe ortho-phosphoric acid unadulterated by alkaline phosphates is used, are Justi's insoluble, Justi's lapidescent, Ames's crystalline, and the Harvard of Richter, of Berlin. I suspect that there are others of the German cements that would come under this class, but I have only been able to test these. Among cement powders, there is less difference chemically than among the liquids, but physically they differ very radically. The basis of all light-coloured cement powders is oxide of zinc, which can exist under many physical conditions. There is the ordinary zinc white, which is amorphous, and does not answer any useful purpose as a cement ingredient until it has been vitrified. After thorough vitrification and subsequent pulverizing, the specific gravity and characteristics have been radically changed. There are various forms of crystalline oxide of zinc produced chemically, but having invariably the same composition. It is my belief that a thoroughly crystalline zinc oxide is much better adapted to the requirements of an ideal oxyphosphate cement than the vitrified amorphous oxide. The crystalline oxide is pleasanter to manipulate, giving freedom from that curdy, clotty condition so objectionable during mixing, and giving a harder, more stable mass after setting. The crystalline oxide is also better adapted to use in connection with straight ortho-phosphoric acid than is the vitrified. So it is in the cements in which this acid is used that we naturally find the best samples of crystalline oxide. The difficulty is apt to be that this crystalline oxide is not in a sufficiently fine state of division, and a cement that is very practical as a filling or pulp-capping material is not at all adapted for crown-setting. It is for this reason that I have found that I can get better results by using a crystalline oxide with many of the adulterated liquids than by using the oxide that is furnished with them. Then with the group of cements in which unadulterated ortho-phosphoric acid is furnished I find that I can use the powders and liquids of all conjointly, getting almost any working quality desired. For instance, the powder of the Harvard is thoroughly crystalline, and of a very fine state of division. With this powder and the liquid of Justi's lapidescent, I have a better cement for crown or inlay setting than by using either of these cements as furnished.

There was some discussion on this paper, several members expressing their preference for one or other cements.

A paper was also read by *Dr. Caracatsanus*, of Athens, on

"THE TREATMENT OF DENTAL CARIES OF THE FIRST, SECOND, AND THIRD DEGREES,"

which briefly described the methods he adopted in these instances.

4th day. *Dr. Whitefield* read a paper on

"SOFT TEETH, AND GALVANIC ACTION BETWEEN GOLD AND BASE METALS."

The writer stated that he had demonstrated that a current was generated by amalgam and gold fillings when placed in water, even when they were not in contact. In the mouth a battery is formed, the fluids are the exciting media, gold is the negative element, and the positive elements are the baser metals used separately, as tin, or more commonly the combination of mercury, gold, tin, silver, zinc, or copper. If gold and amalgam touch one another the surface of the amalgam is soon destroyed, the baser metals being consumed from the face of the plug, leaving the silver, gold, or platinum of which it is composed on the surface, thus changing the amalgam to nearly a silver surface, *i.e.*, to nearly a negative metal. When gold and tin form the voltaic power the base metal soon becomes coated and the current practically ceases. Mercury presents the metal in a form which is easily acted upon by the exciting fluid. Placing amalgam in the back teeth, while gold is placed in the front teeth of children, may explain why gold fillings have to be renewed so often. The electrical action is the clue to the oft repeated tale of patience that amalgam stands better than gold, the real reason being that the destruction round the tooth is due to electro-litic action.

In the discussion, doubt was thrown as to the propriety of applying experiments outside the mouth to results found within, and whilst some denounced the use of amalgam others were just as eager in singing its praises.

5th day.—*Dr. Whitefield* read a paper on

"THE CONSERVATIVE METHOD OF TREATING FRACTURES OF THE ANTERIOR TEETH."

One case he mentioned was that of a boy who broke his central incisor tooth by falling on the ice. Desiring to save the pulp alive he removed the blood with bibulous paper, and bathed it with a mild antiseptic. Having thoroughly dried the exposed portion of the pulp he flowed colodion over it, and then covered the spot with a small piece of No. 4 gold foil. Over this he applied Justi's cement mixed to a cream. Two months later, the pulp being alive and not sensitive, he fixed on an open gold crown. His object in retaining the pulp was that the tooth would become denser and so would last longer. In another operation he pulled the tooth down into line by means of a fine steel wire fastened in bands round the neighbouring teeth.

Dr. Cattell, of Chicago, read a paper, entitled,

"OPERATIVE TECHNICS,"

which consisted of a report of the Technical Department of the North-Western University Dental School.

There was an interesting discussion on this paper, in which various other suggestions were made for the better instruction of students at a Dental College.

SECTION VII.—PROSTHESIS AND ORTHODONTIA.

DR. GODDARD in the chair.

2nd day.—A paper was read by *Dr. Jackson* on

"A METHOD OF CONSTRUCTING SPRING APPLIANCES FOR CORRECTING IRREGULARITIES OF THE TEETH."

In the discussion, Dr. Jackson stated that it was necessary to keep the wires free from rust, if need be by seeing the patient daily and keeping them bright. He had given up plating the wires as he found gold plating was of little value, though tin was better. In answer to a suggestion by Dr. Finlay, who suggested the use of nickel steel wire since this would not rust, Dr. Jackson said that he was hoping to have an opportunity of reporting on the use of this wire soon. Dr. Fernandez always throws such wire appliances into alcohol after removing them from the mouth. He then brushes with soap and water, and states that the plate will not then readily rust again. Several speakers doubted whether these appliances could be as easily removed from the mouth as Dr. Jackson supposed, some stating that they would most certainly cause decay of the teeth.

A paper was read by *C. G. Myers*, Texas, on

"A METHOD OF FUSING PORCELAIN FACING TO BACKING AND CAP."

The material employed is the white enamel used by jewellers in ornamenting gold. This comes in lumps almost as hard as flint, and is reduced to an impalpable powder by grinding in water in an agate mortar and afterwards washing thoroughly. After fitting the thin pure gold backing as accurately as possible to the facing, remove backing, and with a fine pointed brush place a small quantity of the enamel; mix with water to the consistency of cream on back of the facing, but do not let it come in contact with the pins. Replace the backing, and bend pins slightly to hold it in place. Then place facing on asbestos, and flow up backing with solder. The heat required to flow solder will also flow the enamel, forming a perfect union between porcelain and gold. In like manner the enamel may be used to fill space between facing and cap, and when soldered it will form a perfectly cleanly as well as strong piece of work. The enamel can also be used in gold plate work when the teeth are to be soldered to plate, thereby doing away with the uncleanly joints so often found.

3rd day.—*The discussion* on Dr. Jackson's paper was completed.

A paper was then read by *Dr. Jas. Caracatsaris* on the

"POSSIBILITY OF AVOIDING METALLIC CLASPS IN PARTIAL DENTURES OF VULCANITE."

In this paper the author suggested that it was possible in all cases to retain partial plates in position by the use of vulcanite clasps, under which, he did not think, the teeth decayed as rapidly as under those made of metal.

In the discussion the various speakers seemed of opinion that a properly fitting band was not likely to cause decay of the teeth. Dr. Haskell thought that if a band was soldered only for about three-sixteenths of an inch, so forming a spring, the teeth were not likely to become worn as when the band was soldered half or one-third of the way round, as was usually done.

A paper was read by *Dr. Goddard* on

"THE SEPARATION OF A SUPERIOR MAXILLA, ETC."

He described some cases in which after using a screw jack for expanding the arch he had found that a space formed between the upper centrals, this he regarded as being due to a separation of the bone in the mid-line, and he thought this method might be used with advantage in treating irregularities of teeth. No pain or discomfort accompanied or followed in the cases he described, and he thought that a deposit of osseous material in the suture would help to retain the exact width of the arch that had been gained, so giving room for correcting the irregularity of the centrals. Several speakers seemed to have met with cases in which a separation at the symphysis would offer the best explanation. Dr. Talbot stated that such a separation was common if treatment of irregularities was attempted before the age of twelve or fourteen years. In his own daughter he had opened the sutures to the extent of three-sixteenths of an inch. He was also of opinion now that the jaw bends, though he had previously denied it.

5th day.—A paper was read by *Geo. V. I. Brown.* on

"GUTTA-PERCHA IN CROWN AND BRIDGE WORK."

Although fearing that crowns are often used for teeth which could well be filled, and good roots and even whole teeth lost through injudicious attachment for the purpose of sustaining a strain they were unable to bear. He still thought their introduction had done good. They should, however, fill the following conditions: First: Attachment secure without fear of dislodgement. Second: A natural appearance if for the anterior teeth. Third: Provision against the action of destructive agents at or near the gingival line. Fourth: Secured against danger of splitting by a band, or its equivalent, by forming the joining surfaces of root and crown in such manner as to equalise the strain. Fifth: The imitation of the natural form of the crown upon approximal and occluding surfaces. If there be no cap of metal, and he pointed out the difficulty of making these a perfect fit, he believed all crowns, &c., fixed with a cement must be of a temporary nature. Amalgam, though an improvement, was still liable to allow caries at the gingival margin, and was almost impossible to use when there is a cap. Gutta-percha seemed to meet all requirements, its advantages he summed up as follows; First: it is impervious to acid secretions or bacterial influences. Second: Not irritating to surrounding tissues. Third: Easily removed when necessary. Whilst against these three there is simply one consideration, viz., the difficulty of adjustment. To one accustomed to use cement, the difficulty of applying gutta-percha as a substitute seems almost insurmountable, but cement too had its difficulties for the beginner. For gold crowns, where teeth are covered entirely, he prefers the red gutta-percha, we get in form of sheets. It has a degree of toughness that is valuable, but for anterior crowns with open faces the red line at the edge of the openings is undesirable, and he uses some white preparation that softens at a low temperature. There being no wear, hardness is not so desirable. Heat both crowns and setting-material upon a tray to protect from the open flame, spread with warm instruments a thin coating over the inner surface of the crown, after roughening on the inside, aim to have as nearly the exact amount necessary as possible, but depending upon a vent to get rid of a small amount of surplus. After drying the surface of the teeth with alcohol and warm-air blast, wipe with some suitable germicide. saturate a pledget of cotton in eucalyptus, coat the surface with it to prevent the too rapid drying of the chloro-percha, of which a thick solution is then applied around the neck, so that when the crowns already heated as hot as they can be handled in the fingers, and prepared as described are driven home, the eucalyptus, chloro-percha, and gutta-percha in the crowns will form a thick creamy mass that will penetrate and perfectly fill every space about the necks, and even if surplus be not removed afterward, will not cause irritation as might a particle of cement in the same position. If, for accidental or other causes, removal be desired afterward, hot water or hot air applied will in a short time heat the metal sufficiently to soften the material and facilitate the separation without the necessity of damaging the crown.

In the discussion Dr. Brown admitted that there was a difficulty in actually gauging the amount of gutta-percha required, but the same difficulty presented itself in the use of cements. Dr. Matteson moistened the crown of the teeth with eucalyptus, and then filling the artificial crown with base plate gutta-percha, he allowed the patient to bite it home. If it was desired to remove it he used a pair of forceps, the beaks of which had been heated, so softening the gutta-percha. Dr. Goddard considered Hill's gutta-percha the best for filling the interstices between pivot teeth and the root, even better, perhaps, was Flagg's low heat gutta-percha. He had not used gutta-percha for fixing crowns. To remove the band from a root fixed with gutta-percha Dr. Matteson used a minute flame produced by burning alcohol on a fibre of cotton projecting from a drop tube. Dr. Brown used the Richmond Hot-air Apparatus for the same purpose.

er was read by *Geo. J. Dennis*, Chicago. on

"A STUDY OF THE MASTICATING FORCE OF THE JAWS."

With an instrument prepared with a register of ninety-five pounds, tests were conducted to determine the actual masticatory force of the maxillary muscles. So far but one person has been found who could accomplish the full register. From forty to sixty mouths have been examined. The range of the indicator when placed between the molars of the adult jaw was from sixty-five to eighty-five pounds, occasionally but rarely, passing from eighty-five to ninety-five pounds. Between the bicuspids the force is found to diminish from five to fifteen pounds, the range extending from fifty to sixty-five pounds. Between the incisors the range extends from thirty to fifty-five pounds, showing a further diminution of about twenty pound, as the pressure was applied at a greater distance from the location of the power. Among children whose ages range from eight to fourteen years a peculiar fact was noted in that the greater force was applied through the incisors rather than through the molars. The force exerted in these cases ranged from twelve to twenty-five pounds upon the anterior teeth, while upon the posterior the range was from ten to twenty pounds. Probably owing to absorption of the roots of the molars. In the mouths of persons wearing plates, the amount of force exerted was still less, ranging only from five to twenty pounds. The writer believes that in the ordinary movements of chewing the food is only about one-half that of the figures given above, while in most cases in which the food is not properly masticated the force exerted will be found to be only one-third or even one-fourth that of the figures.

There was no discussion.

SECTION VIII.—EDUCATION, LEGISLATION, AND LITERATURE.

Dr. PATRICK in the Chair.

A paper was read by *Dr. Sage* on

"THE EDITORIAL FUNCTION IN DENTAL JOURNALISM,"

in which the writer expressed his views on the part that an editor should play both in writing articles and in the revision of those written by contributors to dental journalism.

A paper was also read by *Dr. P. Macorovici*, of Roumania, on

"THE STATUS OF DENTISTRY AND DENTISTS IN ROUMANIA."

He stated that till 1888 the Roumanian Law required that anyone practising dentistry should possess a foreign diploma, or pass the sub-surgical examination. This required that he should show evidence of attendance for a year at a hospital and instruction in venesection, leeching, blistering, clysters, cataplasms, vaccination, and the extraction of teeth. The candidate, besides, was required to be able to read and write. Where no dentists resided, barbers (sub-surgeons) had permission to extract teeth. In 1888 a new law was promulgated in which a body, known as "Dentists of the Second Class" was recognised, besides Doctors of Surgery and Dental Surgery. These are required to attend for at least three years with a surgeon dentist, and at the conclusion of this had to pass an examination.

3rd day.—A paper was read by *Dr. Black* on the

"REPORT OF THE COMMITTEE OF DENTAL NOMENCLATURE,"

in which the following rules were suggested :—

Rule 1.—Carious cavities shall be designated by the names of the surfaces of the teeth in which they occur. These names are : *Labial* for the incisors and cuspids ; *Buccal*, for the bicuspids and molars ; *Lingual*, for all of the teeth, discarding the word *palatal*. *Mesial* and *distal* for the proximate surfaces. *Occlusal* for the bicuspids and molars, and *incisal*, for the cutting edges of the incisors and cuspids. *Rule* 2.—When two surfaces are involved the names of the surfaces are rendered in compound words, giving the preference. first to mesial and distal as the prefixes ; and second to occlusal. In doing this, drop the final *al* and add *o* thus : *disto-lingual*, *mesio-occlusal*, *occluso-buccal*, *disto-incisal*, etc. *Rule* 3—When three or more surfaces are involved the names of the individual surfaces are rendered in a compound word, thus : *Mesio-occlusal-distal cavity*. *Rule* 4.—Cavities in the angles of the teeth are designated by the anatomical names of the angles in which they occur, thus : *disto-buccal angle cavity ; mesio-lingual angle cavity*, etc. *Rule* 5.—As a class name mesial and distal cavities are called *proximate cavities*. Thus, *proximate cavities* in the *molars*. *Rule* 6.—In describing superficial extent of the cavities use no words indicating direction or position upon the teeth, except the names of the surfaces, the adverbs derived from those names, the division of the surfaces into thirds, or the anatomical names of parts or surface markings of the teeth ; as the lobes, cusps, angles, grooves, pits, etc.

A paper was also read by *Dr. Garrick Newkirk* on

"NOMENCLATURE RELATING TO THE FORMS OF THE DENTAL ARCH WITH SPECIAL POSITIONS OF THE TEETH,"

in which various suggestions were made of what the author regarded as improvements for the nomenclature of the various deformities both of the teeth as a whole and of individual teeth.

This paper was followed by a short discussion.

4th day.—Another paper was read by *Dr. Wm. O. Kulp* on

"Dental Nomenclature,"

and Dr. Secher, of Copenhagen, proposed a system of notation in which the teeth are numbered from 1 to 8, beginning in the median line, the upper teeth being designated by the sign plus (+) the lower by the minus sign (−); the teeth on the right are indicated by −1, −2, etc., those on the left, 1−, 2−, etc. The surfaces are noted

$$\begin{array}{ccc} & 4 & \\ 3 & 1 & 5 \quad - . \\ & 2 & \end{array}$$

A cavity on the grinding-surface of a right upper second molar would be indicated by $+\cdot 7^{1}$; on the distal approximal surface of a lower left second bicuspid would be $-5.^{4}$. There was a short discussion on this method.

A short paper was also read by *Dr. H. B. Noble* on

"Dental Legislation in the United States."

5th day.—*Miss Magnus*, of Christiania, Norway, read a paper on

"Dentistry in Norway, and the Use of Cocaine as a Local Anæsthetic."

She said that in 1892 there were 135 dentists in Norway, including 11 females. There is no Dental School in Norway, but three years have to be spent with an authorized dentist. The student can then, upon production of a certificate from this dentist, present himself for examination. This examination is before a commission of two doctors and dentists, and a perfect knowledge of anatomy, histology, and physiology is required, and he must show evidence of knowledge in extracting and filling teeth, in artificial work, chemistry, metallurgy, and physics. The author briefly narrated her method of using cocaine.

In the Evening Session papers were read by Dr. Sudduth, on "Some of the Forces that Influence the Form of the Jaws and Teeth during the Process of development, and the following papers were also read and illustrated by lantern exhibits:—"A Contribution to the Study of the Development of the Enamel," by Dr. R. R. Andrews; "Some Changes that Take Place in and around the Pulp-canal," by Dr. D. E. Caush; "Luxation, or the Immediate Method, in the Treatment of Irregular Teeth," by Dr. George Cunningham.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents]

To the Editor of the "Dental Record."

Dear Sir,

A man is calling on various members of the profession, representing himself as a brother of Dr. Gaddes, and asking for pecuniary help. He is an imposter and should be given into custody, as several Dental Surgeons have been already swindled by him. Dr. Gaddes, like the blind begger, "never had a brother."
—Yours faithfully, CHAS. W. GLASSINGTON.

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Original Communications.

YET ANOTHER PROFESSIONAL HOLIDAY.

The World's Columbian Dental Congress.

By GEORGE CUNNINGHAM.

"WON'T you give us your impressions in yet another Professional Holiday article for the *Dental Record?*" said a representative of "the" Company, when I stood on the bridge at Waterloo station, as on a coign of vantage, vainly trying to catch sight of a face from Manchester, and another from Vienna, amidst the seething crowd attendant upon the departure of the Eagle express. A hurried, if not a rash, consent compels me now to a labour of love, in many senses, and yet withal, a task of no little delicacy.

It is well at times to forget the existence of cynical critics and carping cavillers, and to give honest expression to thoughts, experiences and convictions, even though self-comfort prompt an apathetic silence as the wiser plan.

"Suppose a neighbour should desire
To light a candle at your fire,
Would it deprive your flame of light
Because another profits by't?"

So, more than neighbour, sympathetic reader—these lines are only penned for such—"I will a round unvarnish'd tale deliver," and "Mark, now, how plain a tale shall put 'some' down," in the hope that others may profit by it.

"Ah! here you are at last," and soon our little party was speeding on its way to Southampton where the train ran right alongside the s.s. *New York* (10,500 tons). In a little over half-an-hour, we had settled down with all our traps and belongings in our floating residential club, without missing, in the least, the delights of an extra cab journey across Liverpool, and the sardine-packed tender from the landing-stage.

Some idea of the magnitude of this Atlantic greyhound was gathered from the positively microscopic dimensions of the smart little cutter, *Alektor*, on which the angel of our last professional holiday had come to give us a "send-off" as we steamed down Southampton water.

The passenger list is, of course, the most important publication of the day. We run it over and are pleased to see quite a dozen names we know from France, Switzerland, and Greece.

Thanks to the social aspect of our scientific and political organizations, and especially to such international gatherings, such as that we were about to attend, there has been created for us, dentists, a kind of freemasonry, informal, it may be, but none the less of the highest order, since the sole passport is a certain standard of professional ethics, which admits to the company of, and fellowship with, a goodly number of persons of no uncommon interest, with whom every earnest dentist can find endless topics of conversations, and with whom conversing we oft forget all time. A high regard for such a standard, implying, as it does, a readiness to sink the individual interest in the professional weal, demands discrimination in the exercise of this fellowship.

Happily for us, no such discrimination was required, so we sought out one another, and soon old friends gladly hailed old familiar faces, and quickly made old friends of the new.

As days go by, the passengers, who came on board as units or as pairs, gradually evoluted into larger and larger groups, but the dental section was days ahead of them all, and soon led the ship in sports and all the various pastimes, which serve to make a pleasant holiday of our ocean trip, as

"She walks the waters like a thing of life,
And seems to dare the elements to strife."

Only one day did the elements "catch on" to any extent. Our own immediate "trio" kept their feet and their full allowance of victuals, but some of the dental section paid rough Neptune's tribute like ordinary mortals. "Coming down to lunch?" "Well, n-n-no, I don't think I shall." "Sick?" "No, but I must have taken something before coming on board that didn't quite agree with me."

> "Sea sickness does make liars of us all;
> And thus the native line of resolution
> Is sicklied o'er with the pale cast of thought."

Anyhow we all had a good time; indeed, so good and so busy a time, that some of those papers for the Congress, which were to get touched up or finished on the voyage, got scarce a thought. In a week the steps, which lately pressed the Strand, dallied in Broadway.

One incident of dental interest occurred. One morning our steward, one of the best of stewards, appeared at table with pale face, a badly swollen cheek. "What's the matter, steward?" "Neuralgia.' Umph! At lunch he was conspicuous by his absence. On hunting him up in his quarters aft, he was found in such agony that, in opening his mouth for examination he nearly fainted. The removal of two broken down and carious roots would have given him almost instant relief. Professional etiquette limited our duty to calling the medical officer's attention to the case, with the result that a pill was administered, and the man on the sick list for an unnecessary length of time. On our return trip, we renewed ou acquaintance with this steward, and found him happier and in better health, than he had been for years, from having followed, when he got on shore, the good dental advice he had given him. One was anxious to know if it was the absence of a proper dental equipment or the lack of any knowledge of common dental troubles which prolonged this man's agony unduly, but the haughtiness of the medical despot, most unusual amongst ship's doctors, effectually precluded any information.

By the way, the usual charity concert was more than a success thanks mainly to the two prolonged "turns" of the inimitable Bessie Bonehill. In simple evening costume, without stage dresses or effects, the true artiste shone out the more in her power to interest so unusual an audience. Despite that and the othe professional talent of her company, both in recitation and in song Dr. Rathbone and Dr. Paterson, whose two tenor solos were rapturously encored, upheld the prestige of our profession's repute in such entertainments.

After three sweltering days in New York, we set off for Buffalo, where we were met, fed and bedded by our old friend Barrett of the misconducted party repute, Exeter B.D.A. meeting. A fear of shocking his well-known modesty, and his possible retaliation in the *Dental Practitioner*, prevents me dwelling on the incidents of our day at Niagara, that dinner (?) at the Prospect House, and the state room party on the sleeping car to Chicago.

Not his fault the loss of our kodak in the rapids near the Three Sisters, nor yet the heroic recovery of the same ; not his, the loss of our Manchester fairy, nor yet his mysterious re-appearance at Niagara Falls Station ; not his, the heat and dust of that long night railroad ride ; nor yet altogether his, the happy mistake through which I missed my direction to descend at the first suburban station of Chicago. A happy mistake, for it brought on board the train the welcome presence of the Secretary General Harlan, who promptly *fixed* us all up in the best of style.

Our first visit was to the Columbian Dental Club, where we were warmly received by President Shepherd, Secretary Hunt, and several members of the Executive Committee, and invested with the badge of membership, a neat gilt button of unobtrusive design, and a special badge of foreign membership—a fearful work of art, a harmony in gilt clasps, gold fringe and blue ribbon, much affected by Ancient Orders of Buffaloes, Oddfellows and the like.

This was the happy inspiration of the Congress Auxiliary Executive, so that the foreign visitors should be quite *en evidence* and not be overlooked in the crowd. The distinctive badge was certainly a good idea, but a silvered instead of a gilt button would have achieved that end, and made us less uncomfortably conscious of our being somewhat conspicuous. Though these were our feelings, it must be admitted that the badge seemed much in favour and highly regarded by, what I may be excused calling, the really foreign members, I mean those whose native tongue is not English.

Our formal yet heartily cordial reception at end, we were hurried off and made members of the Chicago Athletic Club, a palace of luxury, in close vicinity to the Art Palace where the Congress was held. After an enjoyable plunge in the loveliest marble bath imaginable, inspecting the gymnasium, tennis courts, &c., and an appetising cocktail, need I say "Manhattan" of ilk, we were elevated away up in the air, goodness knows how many feet high, to a lovely dining-room with rich carved oak wainscotting, overlooking the the magnificent inland sea, almost misnamed the lake, entertained at an informal dinner by the President, the Secretaries, Executive and General, and the veteran of the Cross of St. Louis. All voted Mac's salad a poem, equal to his toasts. After exchange of personal news and enquiries after old friends, when the stimulus of good cheer made bolder, over the coffee and cigars, the conversation then, as on most other occasions, turned on either the so-called "action of the dental profession of England toward the Congress," or the withdrawal of all recognition of American degrees, or more usually both. So *right here*, it may be as well to put forward the results of an honest effort to explain "the defection of our English brethren, upon whom we had the greatest claims, and whose support the officers had the best right to anticipate." [Editorial, *The Dental Practitioner.*]

The attitude of the British dental organisations has given rise to so much comment on both sides of the Atlantic that any information tending to remove unfortunate misconceptions, or to explain apparent national antagonism to the Dental Congress, will be welcome to many. The bulk of British dentists have never had an opportunity of understanding the situation, while many of those who voted on the question did so in the midst of what seemed inexplicable confusion. A brief historic retrospect of the movement will best explain the nature of the situation.

Although the germ idea of such a Congress originated in the American Dental Association as far back as 1885, the first public announcement of the intention was made in Paris at the First International Dental Congress when, in view of the probability of the World's Columbian Exposition being held at Chicago in 1892, official invitations were made on behalf of the municipality, the organising committee for holding the Exposition at Chicago, and four out of the five then existing dental societies of Chicago.

Subsequently it was decided to hold the Exposition at Chicago in 1893 instead of 1892, a fact sufficient in itself to refute the imputation of any desire to hold an independent Dental Congress in opposition to a dental section of an International Medical Congress. Thereupon the American Dental Association, and the Southern Dental Association, the two national dental bodies, appointed an organising committee of 15 members, which met in August, 1890, and authorised issue of a circular, stating the general objects of the Congress.

This circular was published in all the American journals and sent to every foreign dental journal in December, 1890, or January, 1891, and with the exception of the prospectus and the printed invitations, one to the dentists of America, and another to the dentists of foreign countries, issued in March, 1893, no other official circular was issued or authorised by the General Executive Committee.

It is almost needless to state that none of these communications contain a single phrase which could possibly excite even the most hypersensitive national susceptibility.

In October, 1891, that is nearly a year after the publication of the first circular, an organisation under State control and with State support, entirely independent of dentistry or the dental congress, known as the World's Congress Auxiliary, was created for the purpose of carrying out a series of literary, scientific, industrial and professional congresses, of which the Dental Congress was the hundred and twenty-first.

In January, 1892, the General Executive Committee after about eighteen months' existence accepted the invitation of the Congress Auxiliary to hold the Dental Congress under its patronage with suitable accommodation in the building.

Committees were also formed by the Congress Auxiliary for carrying out several Medical congresses. The regular Medical Congress was abandoned owing to the International Medical Congress at Rome, and the Pan-American Medical Congress at Washington. A proposal to hold the Dental Congress in connection with either the Homœpathic or the Eclectic Medical Congress was very rightly rejected, while no objection was offered to the Dental Congress being grouped with the Pharmaceutical, Chemical, Electrical and Philosophical Congresses. In pursuance of its function the World's Congress Auxiliary, at that time ignorant of the existence of the General Executive Committee already formed, appointed a Committee for the purpose of organising a Dental Congress, which only met once when it was decided to merge their interests and efforts with the organisation appointed by the representative association.

The Women's branch of the Congress Auxiliary also appointed a similar committee of women dentists. The Auxiliary Executive in the name of these two committees issued two circulars in almost identical terms, and similar to those relating to other congresses.

This circular was never submitted to or approved by the General Executive Committee of the World's Columbian Dental Congress, nor even by its own committee of organisation previously referred to. Certain passages in this circular caused, and rightly caused, the outburst of feeling in England, which led to the rescinding of the resolution already passed appointing delegates from the Odontological Society of Great Britain. The invitation to send delegates eminated solely from the Congress Auxiliary, and was forwarded through the State channel of communication, viz.: the Royal Society of Arts. Indeed, the General Executive Committee first learned of the existence of this circular and the invitation to send delegates from private letters from some of those who had been selected as honorary officers for Great Britain.

It was not surprising that, under such circumstances and the near approach of the Congress, the exact nature of the situation was never fully comprended on either side. Anticipating similar action on the part of the British Dental Association, an official letter of explanation was hurriedly prepared for its last Annual General Meeting and addressed to the President. Unfortunately this letter arriving in the midst of all the turmoil of preparation for a busy meeting by an over-worked executive, owing to the illness of the Honorary Secretary, was mislaid, and was only forthcoming at the last moment when the proceedings were about to be closed.

Late on the previous night a meeting was held of all those members of the British Dental Association present who had been appointed as honorary officers or to committees, and included Messrs. Macleod, Mummery, Woodruff, Coffin, Baker, Harding, Spokes and Cunningham. After considering the objectionable circular and the letter to the President of the Odontological Society explaining that that circular did not emanate from the General Executive Committee, it was unanimously decided that as the matter had not officially come before the British Dental Association, it would be sufficient to propose that a delegation of five or six members, including the President, be appointed to represent the Association at the Congress. Next morning a private letter was received announcing the despatch of the official letter to the President of the British Dental Association, hence the question which resulted in the discovery of the missing document.

The proposal of the previous nights' meeting was formally made and lost by an overwhelming majority, while a large number abstained from voting, simply from their inability to sum up the situation, and their impatience to close an unduly protracted meeting. Under such circumstances, had confidence been placed in the carefully considered resolution of those members who made it, the fair name of our National Association would not have been besmirched by the refusal to accept the denial of an honorable body of men as to the authenticity of that circular, and by so inhospitable rejoinder to the magnificent proposal made at Manchester, to hold the Annual Meeting of the Association in Chicago.

It was useless to disclaim any intention of interfering with the attendance of individuals by the refusal to send delegates. It did interfere most seriously with the number attending from Great Britain, and not improbably with that, though less materially, from other countries, and even the United States.

It is indeed a pity that owing to the very complicated organisation of the Congress, and the separate action of its different organising bodies, a confusion should have arisen which deprived many from participating in the benefits of assisting at what was one of the most important, one of the most instructive, and one of the best conducted events in the history of our common profession.

(To be continued.)

COMPLICATIONS OF EXTRACTION.*

By Mr. W. A. Densham.

Mr. President and Gentlemen,—

Before passing to the subject-matter of this evening's paper, I will ask you to consider for a moment the nature of the operation of tooth-extraction. It is an operation which differs from nearly all other surgical operations—to use Mr. Salter's words : " In removing a tooth the Surgeon wrenches or tears an organ from its living connection with the rest of the body, frequently by the exercise of great force—and this force is often applied with little intelligence, the operator being necessarily ignorant, from the hidden and varying nature of the parts of many of the conditions with which he has to deal—it would be difficult to estimate, in measure of so many pounds, what is the force thus sometimes employed, but it must be immense, and, with the exception of the reduction of dislocations of the larger joints, is probably in excess of that which is used in all other operations of surgery."

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* A Paper read before the Students' Society of the Dental Hospital of London.

From these remarks it will be understood that difficulties may often arise, and that casualties even in the hands of the most experienced must occasionally occur. I propose to divide the complications of extraction into :—

1. Those occurring in connection with the teeth themselves.
2. Those occurring in connection with the jaws.
3. Those implicating the soft parts. And
4. Complications occuring during extraction under anæsthetics.

In addition there are complications which do not come under either of these headings, to which I shall have to refer, notably hæmorrhage.

The commonest accident to be discussed under the first heading is that of *fracture of the tooth*, an occurrence with which we are all thoroughly well acquainted. The fracture may be due to carelessness on the part of the operator, such as the selection of badly fitting forceps, the use of too much force, or not getting the forceps well on to the root ; but, on the other hand, the tooth may have been so weakened by decay, or its roots may have been so abnormally placed as to make its removal entire practically impossible. Previous examination will, in some cases, prepare the surgeon for great resistance to his efforts, and such resistance is especially to be looked for in molar teeth standing by themselves, and in yellowish teeth, somewhat worn on their crowns, which are found in persons of a wiry constitution or horsey appearance. When this accident happens, before attempting the removal of the root, the mouth should be thoroughly rinsed, the socket dried with cotton wool, and the edges of the root defined with a probe; the portion already taken away may serve as an indication of what remains. The removal of the fractured piece may now be attempted with root forceps or the elevator, and persevered with up to a certain point. Should our endeavours not be attended with success, it will be better to leave the root, rather than risk the infliction of great injury upon the surrounding parts by a fresh attempt. When the crown of a tooth is broken off, the pulp generally comes away with the extracted portion ; it may, however, remain attached to the root, and, left alone, give rise to severe pain. Our efforts to remove the root should, in such a case, be more persistent; the application of carbolic acid or fuming nitric acid will be found of much service in deadening the pain caused by the exposure. In extracting some teeth, upper molars especially, the apex of one of the roots often remains behind; this may be quite safely left alone, and rarely gives rise to trouble.

Removal of the Wrong Tooth.—At first sight this would seem, if ordinary care were exercised, to be an almost impossible accident, but, as a matter of fact, it is not uncommon, especially during extraction under anaesthetics. *Accidental removal of a neighbouring tooth* may also occur, when force, as in using the elevator, is improperly exerted on adjoining teeth. The treatment in both these cases is to immediately return the tooth to its socket; it will, if previously healthy, become firm in a few days, and be as useful as before.

Removal of the Bicuspid with the Temporary Molar sometimes happens, generally owing to the forceps being pushed up too far. Such an accident is more likely to happen where the gum and alveolar periosteum have been for some time inflamed, causing a softening of the parts. It is most common in extracting upper temporary molars, as the more porous and yielding nature of the bone allows the forceps to sink in further; but Mr. Tomes mentions two cases in which the bicuspids came away with the second temporary molars from the lower jaw. If the root is nearly completed, the tooth may be put back in the socket, but I have not been able to ascertain whether bicuspids so replaced afterwards come into position; if the root were not more than half or two-thirds calcified, it would probably be worse than useless to put the tooth back. These are the chief casualties which may happen to the teeth themselves, and this brings us to the consideration of complications occurring in connection with the jaws, the commonest being *fracture of a portion of the alveolus.* This mostly happens during extraction of upper molars, part of the outer alveolar plate adhering to, and coming away with, the tooth; it is of little consequence, as the bone would ultimately have been removed by absorption. Fracture of a larger portion of the alveolus is more serious, and may lead to loss of the exposed teeth and necrosis of the fractured part. A case is mentioned in the text-books, which was treated at this hospital, in which, in an unsuccessful attempt to remove the first lower molar on the right side, a fracture of this kind occurred, running forward to the symphysis, on a level with the apices of the roots of the teeth; the treatment is to apply a splint of metal vulcanite or gutta percha, and keep the mouth as antiseptic as possible. Cases of direct transverse fracture of the lower jaw have occurred, as the result of attempting to remove a tooth. Mr. Coleman suggests that such an accident would be predisposed to by thinning and weakening of the bone at a certain point by alveolar abscess.

Fracture of the Tuberosity of the Superior Maxilla is a possible complication when extracting upper teeth, but owing to the porous nature of the bone in this situation, and consequently the slight amount of force necessary to remove the tooth, it is not often met with. The fracture may be of any degree of severity. The tuberosity may be left *in situ*, retained by the soft parts, in which case it may become reunited or may be exfoliated; or it may be brought away with the tooth. When this occurs it may be due to a curved condition of the fangs, or to a close adherence between the bone and the root. When the injury is more extensive, it may involve the bony processes and soft parts in the neighbourhood. The severest accident recorded was caused by the slipping of an elevator in the endeavour to extract the stump of an upper wisdom ; the tuberosity was broken away with a part of the floor of the antrum, and a portion of the sphenoid bone; in a further attempt to remove the fractured bone the hamular process was also separated, and fibres of the pterygoid muscles were torn away attached to the pterygoid plates. As the result of this accident the patient became perfectly deaf on that side, owing to inflammation extending to the eustachian tube ; the movements of the lower jaw were also permanently restricted. Owing to the amount of damage which may be done in this region by the elevator, its use for upper wisdom teeth is not recommended.

The last complication to be considered in connection with the jaws, *is the passage of the root of a tooth into the antrum* during an attempt to extract it. This accident occurs more often with the second upper bicuspid than with any other tooth. It is sometimes unavoidable, and may happen to the most careful operator ; but it may be due to carelessly placing the forceps on the root and then pushing up, instead of making the blades encircle the root. Opinions differ as to the advisability of attempting its removal.

Mr. Coleman recommends that it should be left, unless it gives rise to irritation, and mentions the case of a gentleman who has had the root of a second bicuspid in his antrum for over twenty years without experiencing any discomfort. The general verdict, however, is in favour of at least an attempt at removal. For this purpose the opening into the antrum must be freely enlarged, and the cavity syringed with a good stream of warm water ; the root will very probably be washed out by the return current, and care must be taken that the fragment, if a small one, does not come away unperceived. If this fails, a loop of wire, or a piece of wire with a cup of gutta percha attached, may be tried, but if the syringing does not wash the root out the antrum is probably divided up by a septum, across which the tooth has passed ; in this case it might be got at by making another opening through the canine fossa, but it will be better to desist in the attempt rather than make a second opening into the antrum ; the cavity should be thoroughly syringed with an antiseptic solution, and the patient warned to return if any uneasiness is felt on that side.

Accidents Implicating the Soft Parts.—There is only one which is at all common, namely, *Tearing the Gum.* The gum may become attached to a root or tooth by strong fibrous adhesions, and more especially is this the case with the posterior surface of the lower wisdom tooth. If this is suspected, the gum may be separated from the root with a lancet before applying the forceps. In America, I believe, it is still a common practice to use the lancet on every tooth, but this is quite unnecessary. Should this condition be found during an operation under gas, the tooth may be quite safely left hanging, while the others, if any, are removed. When the patient has regained consciousness it may be cut away with gum scissors.

The mucous membrane of almost any part of the mouth or the tongue may be wounded by the slipping of the instrument, or the lip may be squeezed between the forceps, or, finally, the inferior dental nerve may be injured in extracting lower wisdom teeth, producing paralysis or numbness of the region supplied by the nerve. The patient should be informed that sensation will, in time, be restored.

We now come to the consideration of *Casualties which may happen under Anæsthetics ;* and under this heading I include those which can *only* occur when the patient is unconscious, and those which are most likely to happen with the patient in this condition. Of these by far the most serious is the *passage of some foreign body*, such as a tooth or piece of fractured forceps, into the pharynx or air passages. In the first case, the fragment will not become impacted and will be eventually evacuated. Impaction of a foreign body in the larynx, trachea or bronchi is most to be feared. Cases of this kind have been recorded from time to time, and it is necessary to carefully consider how the accident has happened, in order to guard against its recurrence. It is less likely to happen with a conscious patient, and, if it does, less likely to be followed by death ; while the lividity attending anæsthesia under gas may for a time delay the recognition of the nature of the case. In operating under anæsthetics, should the tooth slip from the forceps, it must be found and removed from the mouth before the extraction of another is attempted, and this rule must be strictly adhered to, as, although in 99 cases out of a 100 the fragment might be left with impunity, yet a fatal case of this kind due to carelessness would be such a terrible responsibility, that there should be no possibility of such a thing happening. If the body has passed to the back of the mouth a sweeping movement of the forefinger may bring it forward ; if this fails the patient must be inverted and slapped on the back. When a number of teeth or stumps are to be removed under chloroform, it will be found a good plan to place a small lightly-rolled napkin at the back of the mouth, to intercept any fragment that may escape from the forceps. Accidents with a fatal termination have been sufficiently numerous to render it imperative upon those who have charge of an unconscious patient, whilst guarding against them with every care, always to bear in mind the possibility of being compelled to have recourse to laryngotomy and tracheotomy as a last resource against impending suffocation. If the foreign body becomes arrested at the entrance to the larynx, or lodged in the larynx, the patient will be seized with violent coughing, and all the symptoms of impending asphyxia, or the body may pass into one or other of the bronchi and set up inflammatory mischief, which may be terminated by the tooth being coughed up, even after a considerable time. Should there be reason to suppose that this accident has happened, no attempt should be made to promote its return until everything is in readiness for operation, in case the body should become impacted in the larynx. In a case which came under the care of Sir William

McCormac, the blade of a pair of upper stump forceps broke off and disappeared. The patient became black in the face, with great dyspnœa, and appeared to be dying. The alarming symptoms passed off, and five weeks afterwards Sir William McCormac removed the fragment from the right bronchus and the patient recovered.

Dislocation of the Lower Jaw is not an uncommon accident, and s taken here, as it most frequently occurs under anæsthetics, doubtless in consequence of the relaxed condition of the muscles, and also because the operator tends to use greater force when the patient is unconscious. The dislocation may be unilateral or bilateral, generally the latter. It might in most cases be prevented by supporting the jaw during the operation with the fingers or thumb of the left hand. The diagnosis of the condition is easy. The jaw is fixed and protruded, and the mouth wide open , the saliva dribbles away owing to difficulty in swallowing, and speech is imperfect. A slight hollow may be felt behind the condyles, and this is the chief point to rely on in unilateral dislocation. To reduce the dislocation the patient should be seated on the floor, the surgeon's thumbs protected by lint or a napkin and placed within the mouth on the second and third lower molar teeth on each side. The fingers are then passed beneath the chin, which is tilted upwards, and the condyles being disengaged at the same time by forcible pressure downwards with the thumbs, the jaw springs into place.

The dislocation may have been the result of too much force, but on inquiry it is often found that the patient's jaw is constantly being put out on very slight provocation, such as a prolonged yawn, consequently the operator is exonerated from blame.

Other possible accidents under anæsthetics which require to be mentioned are:—*Forcing Out a Tooth with the Prop*, and *Slipping of the Tongue backwards over the Larynx.* The first casualty occurs when the prop is used between front teeth. The tooth should be immediately replaced. It is very undesirable, and in most cases unnecessary, to use a prop on the front teeth, but if this is done the prop should be a short one. Slipping of the tongue over the glottis may be recognised by difficulty or arrest of breathing. The operation should be stopped, and the tongue pulled forward with tongue forceps.

There now remain to be considered various sequelae which complicate the operation of tooth extraction. I will first, however, say a few words about *Syncope.*

A *simple fainting fit* often comes on either before or after the operation, and is treated by inducing a flow of blood to the head, in order to excite the respiratory and cardiac centres in the medulla ; and by the internal administration of some stimulant, as sal volatile. Two cases of *fatal* syncope have been recorded. In the first, the extraction of a lower molar was attempted; an alarming fainting fit came on, and the operation was stopped. On the patient recovering she requested that the operation should be completed, but before the forceps had touched the tooth fatal syncope ensued. The post mortem examination revealed only a slight amount of cerebral congestion.

The second case was also that of a woman, who wanted an upper bicuspid taken out under gas. The dentist, knowing her to be suffering from a weak heart, refused the anæsthetic and removed the tooth without, with the result that the patient collapsed and died in a few minutes. Had this patient died under gas the death would, no doubt, have been attributed to the anæsthetic.

Alveolar Hæmorrhage.—Hæmorrhage following the extraction of teeth is, in the great majority of cases, slight, usually ceasing within a few minutes. Occasionally oozing continues for a considerable time, especially if there has been long standing inflammation, the vessels under such conditions contracting less readily. Still more rarely the flow may be so severe as to lead to the gravest consequences if not checked.

Alveolar hæmorrhage may be primary, recurrent, or secondary. *Primary hæmorrhage* is, of course, a natural sequence of tooth extraction, and, as before mentioned, is usually very slight ; or if more persistent than usual may be controlled with ice-cold water or tannic acid. Plugging the socket is very rarely necessary. A curious case of death from primary hæmorrhage occurred some years ago. The hæmorrhage followed the extraction of a lower incisor which had been erupted before birth. In spite of compression, perchloride of iron, and the actual cautery, the child gradually bled to death.

Recurrent or Secondary Hæmorrhage is a much more serious complication, and generally occurs in persons suffering from hæmophilia or the hæmorrhagic diathesis, commonly known as bleeders. This condition is hereditary, is transmitted almost invariably through the female line, and generally occurs in males.

Dr. Richardson is the greatest authority on hæmorrhage, and much of what follows is taken from a paper read by him before the Odontological Society two years ago. He affirms that there are three distinct conditions leading to dangerous hæmorrhage after tooth extraction, viz. :—

1. Abnormal fluidity of the blood.
2. Deficient contractile power in the divided vessels.
3. Mechanical lesion favouring the flow of blood.

In the last condition the hæmorrhage is due to accident connected with the extraction, such as tearing away a portion of the alveolus, and may be at once dismissed, as it is extremely rare as a cause of hæmorrhage. The first condition of *abnormal fluidity* is characterized by purpuric eruptions owing to the extravasation of blood under the skin. It is divided into the *aqueous* form, in which there is an excess of water, and the *saline* form, in which the fluidity is due to an excess of soluble saline material. In both forms there is an absolute want of coagulability.

The aqueous state of the blood is *usually* accompanied by the characteristic purpuric eruption, and if this is not present it may be often induced by freezing a point of skin with the ether spray, thus affording a valuable mode of diagnosis. This is the hereditary form, and there is usually a history of hæmorrhage of fluid blood caused by slight wounds and restrained with difficulty. This form may also be induced by some nervous shock or injury.

In the second form of abnormal fluidity, in which the condition is due to an excess of saline material, there is no necessary history of hæmorrhage, nor of hereditary disposition : but the purpuric eruption may be present, and there is always a history of an induced morbid condition from error in diet, over-indulgence in alcohol, &c.

Dr. RICHARDSON groups into his second division the hæmorrhages occurring from deficiency in the contractile power of the blood vessel. In these cases the fault lies, not with the blood, which is generally normal and coagulates readily, but with the vessel walls. There are three or four classes of persons who suffer from hæmorrhage of this character on slight causes. In the first, the largest class, a slight accident is liable to produce a discoloured swelling. These subjects are usually well nourished and young, disposed to be fat, and generally present some deformity of the body more or less marked, such as curvature of the spine. In other examples of this type the patients are anæmic. In a third class the condition is due to the effects of alcohol, and in a fourth class the patients are suffering from syphilitic disease. In all these classes the blood may retain its power of coagulation.

That which makes a person suffering from hæmophilia such a serious responsibility is the fact that the primary hæmorrhage, except in the condition of abnormal fluidity, is often not at all severe, and shortly ceases. Some time after, when possibly the patient is at a distance from medical aid, the secondary flow commences; thus it is most important that this condition should be recognized, in order that extraction may not be rashly undertaken, until other means have been tried. Some practitioners recommend the gradual removal of the tooth by a rubber band placed round it this being allowed to gradually work up to the apex. If an operation is absolutely necessary, the patient should be prepared by the internal administration, for a few days beforehand, of ergot and sulphuric acid, or gallic acid, and all the appliances for plugging the socket should be at hand. It appears that very little will check the secondary hæmorrhage at the moment of commencing, but once it gets fairly started it is much more difficult to control,

In dealing with a case of serious hæmorrhage it is essential first of all to ascertain whether the blood is, or is not, coagulable. If coagulable, all that is necessary is to retain the blood in the cavity sufficiently long for a clot to be formed. For this purpose a plug must be inserted, and the best material appears to be matico leaf, rolled into the form of a cigar with the rough side outwards. If the tooth had more than one root, each opening in the socket should be treated separately with little rolls of matico. When the socket has been filled, a pad of lint is placed over it and the upper teeth kept closed upon the pad by a four-tailed bandage. Messrs. Tomes and Coleman have never failed to arrest hæmorrhage by this means. Other surgeons place great faith in the tooth itself as the plug, a few fibres of cotton wool dipped in tannin being first wrapped round. Dr. Richardson considers the best styptic to be nitric acid, but for ordinary cases he uses his styptic colloid, applied on cotton wool in the form of a plug; if this fails, he has invented a "gutta-percha styptic plug," which he considers excellent. It consists of a disc of gutta-percha saturated with some styptic. The disc is picked up by the forceps, softened in hot water, and pressed firmly down to the bottom of the cavity. When full, a compress is placed over, and a four-tailed bandage applied. In every case the patient should be kept perfectly quiet in a cool room, with the head elevated, and the use of alcohol should be carefully avoided.

In the treatment of the more serious cases in which the blood is not naturally coagulable, it is necessary to produce secondary or albuminoid coagulation. There are three methods of doing this, *viz.*, by the application of tannin, perchloride of iron, or the actual cautery. The gutta percha discs saturated with tannin or perchloride may be first tried ; if they fail, the cautery must be at once resorted to, and its effect is, as a rule, immediate. Should it fail, there is no other direct local means that can be depended on. Ligature of the common carotid would be useless, as bleeding would then commence from the surgical wound. Such a case occured at St. George's Hospital some years ago, after extraction of a lower molar. Everything that could be suggested was tried, with sometimes temporary success. Finally the lower jaw was cut through, and the inferior dental canal plugged ; bleeding, however, recommenced from the wound, and the patient died.

Pain after Extraction.—Pain set up by a diseased tooth does not always cease with its removal. Especially is this the case where periodontitis existed previously, or when the root was exostosed. On the other hand the pain of acute periostitis is often put an end to by the relief of tension produced by the extraction. When pain continues, it may be due to tearing or stretching of the periosteum by bending outwards, or partial fracture of the alveolar walls, hence it is a good plan to pinch the plate together with the thumb and forefinger of the left hand immediately the tooth is taken out. Retention of the serous exudation by too rapid healing of the gum margin is a common cause of pain, especially in the lower jaw, where the secretions from the granulating surface are less able to drain away. The opening should be plugged with cotton wool, and the socket syringed out on the following day. Where there is a sloughy, suppurating appearance, the exposed alveolar gum margin may be touched with solid nitrate of silver, after thoroughly syringing the part, or a small piece of chloride of zinc may be dropped into the socket. If the pain continues for several days, soothing fomentations, such as poppy-head and chlorate of potash, will be found efficacious.

Septic and Infective Sqeuelae.—The various septic and infective troubles which may follow upon wounds in other parts of the body, may also occur after tooth extraction. Dr. Miller has collected thirteen cases of this kind, twelve of which ended fatally. A case of traumatic erysipelas after removal of stumps on the left side of the upper jaw is recorded in the Journal of the British Dental Association for March of last year. The whole of the face became swollen, the cheek bulged and the skin red, the upper lip was also swollen; the patient was semi-delirious and prostrate, with a temperature of 102·5. Deep incisions were made, but no pus was found; the patient died the same night. Such cases as these are exceedingly rare, and, considering the enormous number of teeth which are daily extracted, the extraction being frequently accompanied by considerable laceration and tearing of the parts,—considering also the frequently foul state of the mouth, and the impossibility of treating the part antiseptically,—it is indeed marvellous that cases of septic poisoning are not more common. Various theories have been advanced in explanation of this immunity. It is held by some that, owing to the very vascular condition of the gums, a larger number of leucocytes is available for the destruction of the noxious bacteria than in other parts of the body; others consider that the antiseptic properties of the saliva affords a possible explanation, while others again credit the salivary corpuscles with a phagocytic action. Of these theories the first appears to be the least improbable.

REPORTS OF SOCIETY.

DENTAL STUDENTS SOCIETY, LONDON DENTAL HOSPITAL.

ORDINARY GENERAL MEETING, held Monday, October, 16th, 1893, the President, W. H. WOODRUFF, Esq., in the Chair, the minutes of the previous meeting were read and confirmed.

Bye-law XL.—" That any member may borrow a book for the period of a week, and in the event of no other application being made, may renew for another week, but on taking the same shall sign the librarian's book provided for that purpose," was put to the meeting and carried unanimously.

The following gentlemen then signed the obligation book and were admitted as members by the President, E. E. Parrot, S. Bonnabe, H. Jeffes, P. F. Swaby, G. Macdonald.

A vote of thanks was then passed to Messrs. Smale and Colyer for the present of their book on " Diseases and Injuries of the Teeth."

On casual communications being called for, Mr. W. W. Gabell, on behalf of himself and Mr. L. G. Austin, presented the Society with two models of cleft palate, three of supernumary teeth with well marked cusps all round the mouth, and one of a very misplaced lower canine.

Mr. T. Clarence gave a model showing the absence of all the biscupids, two rudimentary laterals and a rudimentary upper wisdom, the six year old lower molar right was extracted ; the patient was 22 years old, and there was no family history of the same defect. Also a right upper wisdom tooth from a patient aged 45, which caused pain, and after some difficulty in extraction showed a large globular development of the root. He also showed a small instrument for trimming fillings, of which the President spoke very highly.

Mr. Torpey showed three specimens, one a model of a very much displaced biscuspid and canine, from a patient aged 10 ; a left upper wisdom with five roots, and a first lower biscupid with a very abnormal shaped root.

Mr. E. Gardner mentioned the absence of the left canine in two children of a family under his care, and Mr. E. Mosley promised models showing the presence of pointed laterals in a mother and her son.

The President said that cases of absence of teeth very often were hereditary.

Mr. Preedy showed a " horrid example of the guinea 'jaw-full.' "

Mr. W. Densham showed a tooth which, after extraction, was found to have a piece of wood projecting from its apex.

The President then called on Mr. W. Densham for his paper on the " Complications of Extraction." (See page 488.)

The President, after congratulating Mr. Densham on his paper, called for a good discussion.

Mr. Clarence congratulated Mr. Densham on his excellent paper, especially his remarks on hæmorrhage. He warned students to be careful of teeth standing by themselves, as they are usually set in very dense bone. He also recommended nitrate of silver as a caustic to exposed nerves on broken teeth. In extracting upper molars he thought it was a good plan to place the finger behind them to protect the wisdom tuberosity, and also he believed the fingers were quite efficient to pull forward the tongue when displaced backwards, and advised members in cases of hæmorrhage to examine whether it came from the artery or gum, in the latter cases he applied nitrate of silver, in the former he packed the socket, after washing out the clot, with pieces of wool dipped in perchloride of iron, and then used styptic colloidon on top.

Mr. Evans said that Mr. Densham had omitted to state that in extracting upper canines it is a common occurrence to remove the outer plate of the alveolus, which is thinner over the canine than elsewhere ; he had himself seen a specimen where the whale of the alveolus over the upper canine had been removed. He supposed when Mr. Densham mentioned keeping the mouth " antiseptic " he meant " aseptic."

Mr. Bennett spoke of the necessity of performing laryngotomy or tracheotomy as a very disagreeable thing, and wished to know which was the preferable operation. He believed that in cases of sudden asphyxia the orthodox operation was laryngotomy through the crico-thyroid membrane, owing to its greater simplicity, safety and celerity.

Mr. Nicol remarked that Mr. Densham had omitted the mention of prophylactic treatment in those cases where previous hæmorrhages could be traced to a deficiency of coagulating power in the blood ; in connection with this, the recent researches of Dr. Halliburton (Goulstonian Lectures '93) suggested the administration of some calcium salt—for convenience, calcium chloride gr. XV., three times daily—for a week before the operation. The deafness occurring as a sequel to complete fracture of the maxillary tuberosity seemed not unlikely to be caused by concomitant fracture of the hamular process, the tensor palati, whose tendon winds round this process, thus loses its *point d' appui* and certain of its fibres inserted into the eustachian tube, and named salpingo-pharyngens, can no longer act ; the normal intratympanic air pressure can no longer be maintained, the air becomes absorbed, the membana tympani falls in, coming into contact with the promontary, and deafness results. He then described a new method of reducing dislocation of the tempero-maxillary articulation, designed by Mr. Roth, and pointed out its advantges.

Mr. Dodd in the course of a very interesting and well-expressed speech, regretted that Mr. Colyer had decided to leave the discussion of this subject to the students, and said he thought that much more light could be thrown upon the more important aspect of the subject now under discussion by certain members of the staff now present, whose experience had been so varied that they must have encountered and overcome difficulties which the students had as yet never met with, and which, if they were forwarned, would perhaps never appear as real difficulties. They did not want to hear the complications that would follow extraction by a first year's man, but rather those with which men, who had long since entered upon the anxieties of private practice, had to deal. He went on to say that Mr. Nicol had spoken in a very interesting way with regard to prophylactic treatment of hæmorrhage, he would go further, and say what appeared to him to be a more important factor in the prophylactic treatment of the complications themselves, viz., constant care and watchfulness over the tooth and forceps during the whole time of the operation. He asked someone present to give their opinion with regard to the grasping of the alveolus when extracting difficult roots. He concluded by saying that at a class he had once mentioned as a " complication " the fracture of the forceps, and this had raised a laugh, he was, however, glad that Mr. Densham had confirmed him in his view that this was a most important item among, and ought to be considered as one, of the complications of tooth extraction.

Mr. E. Lloyd-Williams, in response to Mr. Dodd's appeal, stated, that where a root was so imbedded in its socket that it could not be seized fairly with a pair of forceps, or removed with an elevator, he had always both practised and taught the advisability of removing a portion of alveolus with the root, using a pair of root forceps with edges sharp and stoned, as indeed they should be under any conditions. He advocated the use of the finger or thumb as a protection to the patient's tongue in using the straight elevator, and referred to the serious wounding of the lips by careless pressure in extracting, or the reckless use of the " Mason " gag during anæsthetic operations in the mouth. With regard to the accident of removal of a large fragment of the outer alveolar plate during the extraction of upper molars, whilst quite admitting that it was sometimes unavoidable, Mr. Lloyd-Williams was of opinion that too often it was the result of the unscientific application of the buccal blade of the forceps, indeed, the motto " Excelsior," or " higher up," in tooth extraction had been carried to excess at that hospital, and students were apt to forget that the deliberate application of the forceps could not be supplanted by mere pushing up.

Mr. D. P. Gabell rose to say that Mr. Densham had neglected to mention the partial dislocation of a tooth into the antrum and to state, that such must be left untouched for fear of pushing them right in; also the wounding of the anterior palatine artery, some eighteen months back in extracting an upper molar stump at this hospital, a student had let the palatial blade of his forceps slip and had so cut this artery, causing severe arterial bleeding.

Mr. A. B. Densham said that the use of ergot as a preventive to peripheral bleeding, was look upon with less favour than formerly because by its specific action it caused the contraction of all the arteriales, thus giving rise to increased blood pressure, and consequently increased tendency to bleed from the abraided surface. The occurence of sepsis and veneral infection after extraction, was a serious complication and being avoidable by cleanliness and the use of carbolic and other efficient antiseptics was most reprehensible. The bleeding occuring in "bleeders" was usually not "secondary" but "reactionary," that is, happening within twelve hours, and he quoted a case in point. Finally, he advised men always to inquire of the patient before extracting, if they had had any trouble with previous extractions, as by this means they often obtained valuable hints.

The President in closing the discussion said, he believed Mr. Densham had not referred to the driving of forceps and teeth into the nose, but this was an accident he had seen more than once, he would further call attention to the great care necessary when extracting more than one tooth with the same pair of forceps, the patient being under gas, to ensure the forceps being free from the first tooth or stump, and thought a good plan was to wipe them backwards and forwards on a cloth. It had happened to him on one occasion that a tooth which he had thought had been disengaged from the forceps, by throwing behind him, was not so till he was bringing it to the mouth to operate a second time, and it was then jerked down the patient's throat. He thought Mr. Densham was wrong in recommending the upright position for a hæmorrhagic patient, as there was less strain on the heart and the circulation was less impeded and more even with a patient lying down. Finally, noticing that Mr. Densham had not referred to the removal of the plugs, and suggested he should state in his reply how long he thought it advisable to keep them in the socket. He then called upon Mr. Densham for his reply.

On rising to reply, Mr. Densham said he would not detain them long, as there was another meeting to be held after that. He would liked to have heard Mr. Clarence's reasons for pinching the tooth away from the adherent gum, he could see no objection to the use of gum scissors. He explained that when recommending the use of tongue forceps, he was thinking more especially of a case of threatened asphyxia under chloroform he once witnessed, due to the slipping backwards of the tongue, in which it could only be got at by this means, no doubt in most cases the tongue could be manipulated with the finger. As regards the removal of a portion of alveolus with a tooth, he agreed with Mr. Evans that it did often occur when extracting upper canines, although not so frequently as with the molars, but it was not a point of much importance. In reply to Mr. Bennett, the question as to whether laryngotomy or tracheotomy was to be performed would be determined by the position of the foreign body. The usual operation for the relief of asphyxia, was laryngotomy. Whatever the operation to be undertaken, there was of course a particular method of going to work, by which important structures were avoided. With regard to the cause of deafness in fracture of the tuberosity, the deafness might very probably in many cases be traced to interference with the action of the salpingo-pharyngeous owing to fracture of the hamular process, but in the case quoted in the paper the deafness had been traced to spread of inflammation to the eustachian tube. The method of reducing dislocation of the lower jaw mentioned by Mr. Nicol was, he should think, very effective and would be useful when great force was necessary. The method advocated was however, very simple, and usually effectual. Apropos of Mr. Dodd's remarks concerning fractured forceps, he might mention that in two cases in which this accident happened the forceps were Evrard's, and in three cases Ash's lower stumps were broken. The President had asked him to say what time should be allowed to elapse before the plugs were removed. He had hesitated to recommend any time, owing to the great difference of opinion which existed, it was advised by some that the plugs should be allowed to slough away, but there was the great danger of the hæmorrhage recurring, those plugs which were composed of a number of pellets might be removed gradually. There was some slight misunderstanding about the position in which the patient should be placed. What he had really said was: "the patient should be kept perfectly quiet in a cool room, *with the head elevated.*" He was sure they were all greatly indebted to the members of the staff present, for their remarks.

A vote of thanks to Mr. Densham for his paper and to the gentlemen who brought forward Casual Communications was passed.

The PRESIDENT then announced that the next meeting would be held on November 13th, when Mr. L. G. Austin would read a paper on "Congenital Affections of the Mouth," and also that a clinical evening would be held on Monday, October 30th at 7 o'clock.

The proceedings then terminated.

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ETHICS.

In the whole range of matters, which come within our professional ken, there is, perhaps, no point more fruitful in disputes than this subject, Dental-ethics. Professional ethics, professional morality is, perchance unfortunately, ruled by no definite unalterable laws, fixed once and for all time. It is a variable quantity, altering with time, place and manners. Habits change, and so do morals. The code of morals of one century is often a code of immoralities for the next. Yet, doubtless, there is a morality—both personal and professional—which seems almost "hedged in with a divinity," and to which the better men of all time have done obeisance; and we, if asked for a definition of such a morality, would like to sum it up in the old-fashioned simple words "doing unto others as you would be done by." Would not such a morality be equally adapted to professional ethics? Have not all morals, professional or otherwise, grown out of this feeling? Not necessarily an individual expression of how a man would be done by, but a collective opinion defining how best to work out the struggle for existence, doing the least harm to our fellow men. Yet, the customs that have grown up around us have, we fancy, not failed to feel the influence of a modifying agent—a natural sense of what is beautiful. Beauty is not confined to mere outward physical conditions, but we recognise it also in the motives of an action and the manner it is performed. Two actions may be equally moral, equally right, but in the one we often trace an incentive, and form of expression, which appeal to our sense of what is beautiful far more powerfully than those which are present, if present at all, in the other. So this feeling, a mere question of taste, as some would call it, has found utterance in the Code of Ethics; indeed, the two elements have become so fused together that many actions we could hardly condemn on the ground of professional immorality are quite as hateful to us as if we could. Take the question of blazening forth one's superiority—social, professional, intellectual, or any other—by speech or writing, or by other means, whether such an announcement be for the purpose of gain or not, can we condemn this on the ground of morality? It would be difficult; yet we do condemn it, all of us do, and why? Because it grates too seriously on one's sense of what we expect from a high-minded gentleman. It is thus by no means necessary for a man to offend against common honesty to find himself out of agreement with his professional brethern, and, if so, surely this cannot fail to be a disappointment to him.

But this subject has yet another aspect. We assume, and we think we have a right to assume, that a man in voluntarily joining a profession, in availing himself of the knowledge, which has been garnered as a consequence of the labours of his forerunners, who avails himself of the benefits of professional life, also, and in no half-hearted way, takes upon himself the responsibilities of living and behaving according to professional usages. These usages are well known, there is no mystery about them, no unneeded ritual, no irksome conditions, nothing but behaving according to the conditions growing out of our previous definition of morality. Such a Code of Ethics can hardly be expressed in formal printed sentences. It would be possible to live right up to the letter of the code and fail altogether to observe its spirit. Nay it is possible for a man to be a Pharisee of the Pharisees, to publicly give thanks that he is not as other men are; to publicly renounce the unclean thing, and yet utterly to fail in professional kindliness and charity, which the code assumes as a postulate. Such, alas! are beyond the pale of redemption, but there seem some, invertebrate well-meaners, may we call them, who start full of professional spirit, but who, when the bearing-reins are loosened, get off the highroad to nibble at some succulent weed by the wayside, and are apt to dawdle there till the way back is lost or barred. These are they who must be kept in line if we would have ranks in order. A kindly word or deed may help a young man over a crisis, so rendering unprofessional conduct needless. A greater care in admitting through the portals of the examination only such as are fully qualified in their work, and of the practitioner in advising a boy as to his suitability for the profession, would do much, and for others, the proverbial rod-in-pickle could be provided by only granting a diploma on the written promise that certain practices will never be adopted.

News and Notes.

The Annnal Dinner of the Past and Present Students of the Hospital will be held on Saturday, December 2nd, at the Hotel Metropole, Mr. John Whitaker Hulke, F.R.S., President of the Royal College of Surgeons, in the chair.

During the past year 92 candidates presented themselves for the examination in dental surgery at the Royal College of Surgeons, England; of these 57 passed. The next examination commences on the 13th inst.

We are pleased to note that Mr. George E. Clarke, L.D.S.I., has been appointed a magistrate for the Borough of Lowestoft.

Dr. Evans, of Paris, has presented a large mansion in the Rue de la Pompe to a committee, in order that it may serve as a residence for about fifty of those American ladies, who come to Paris in order to study the arts of sculpture and engraving. The establishment will be under the direction of a doctor, who will have a clergyman to aid him. The necessity of such a home has been long under the consideration of the American residents in Paris, but owing to the costliness of large houses it was impossible to make satisfactory arrangements.

A Course of Lectures on "Physiology," with microscopical demonstrations, will be given at King's College, London, in connection with the evening class department, on Mondays, at 6 p.m., from October to March, by Peyton T. B. Beale, F.R.C.S. Demonstrator of Physiology in King's College, London. Fee for the course, £2 2s. Apply to J. W. Cunningham, Esq., Secretary.

The October entry for 1893 at Guy's Hospital Dental School numbers 24, 7 students having entered for the conjoint and dental courses, and 17 for the special and general lectures and practice for the license in dental surgery. The Entrance Scholarship in Arts, of the value of £30, has been awarded in the Dental School for the first time this session, and that it has been gained by Mr. Graham Scales Simpson, of Brighton, and formerly of the Nonconformist Grammar School, Bishop's Stortford.

"*Inventions*" records the discovery of a rich mineral deposit in the vicinity of the ancient Spanish mission of Albiquin, New Mexico. It consists of a forest of logs petrified into copper ore, averaging 60 per cent. copper and 30 to 40 ounces of silver to the ton. The logs seem to have floated in some kind of a mineral solution, evidently in the carboniferous period, and are regarded as something entirely new in the science of mineralogy.

The use of artificial substitutes for teeth, that have been lost, is now so universal, that it strikes us as unusual to read of anyone who does not avail himself of these. This seems to have been the case with the late Marshal MacMahon. An evening paper records the fact that his one physical weakness was the state of his teeth, and not being able to endure false ones, the absence of incisors seems to have seriously handicapped his elocutionary efforts. Two or three decades back such a loss would hardly have called for remark. In Dickens's description of the two Cheeryble Brothers many dental readers will doubtless have noted, that he says "both had lost nearly the same teeth, which imparted the same peculiarity to their speech." Nowadays, we doubt not that brother Charles would have insisted on brother Ned availing himself of dental aid, even though he himself would have sooner sent the fee, under Tim Linkinwater's name, to one of their many pensioners.

We are indebted to Mr. Cardell for the following note. "In close bites, where there is no room for artificial teeth, it is usual to strike up a piece of metal, either gold or dental alloy, to render the biting surface hard for attrition. I find the following method easier, and I believe more effectual for the purpose in view. Mount the piece in wax, try it in the mouth, care being taken to see that the patient articulates in every manner possible. Flask, and then pack with rubber as usual ; now take any odd pieces of metal in the tray and cut them into short strips about $\frac{3}{16}$in. in length, curling each end towards each other. Press these into the biting surface of the rubber at short and regular intervals, with the free ends embedded in the rubber. When vulcanized and polished the bite will be found studded with small pieces of metal, representing the hard and soft portions of an elephant's molar."

MESSRS. FLETCHER, RUSSELL & CO., of Warrington, send us a small gas boiling burner of cast iron, of which they write : "the surface of which has been treated by a new process which entirely prevents rust, whilst as regards decorative effect, the capabilities are unlimited. All colours, the most delicate tints in any number, either dead or bright, and both gold and silver, also either dull or polished are obtainable on the same casting, and all alike are unchangeable, either with exposure to air, or to any heat up to a bright red. The film of enamel is so thin that the most microscopic details on the metal are unchanged. The application is new, and admits of a large extension for permanent decorative work of all kinds ; castings protected in this manner are not only capable of fine artistic treatment, but they are absolutely permanent and proof against dirt and smoke which disfigure other work so rapidly." We have tested the application of heat and moisture, and they certainly produce no apparent change of the coating. It seems to us that there must be unlimited possibilities in the application of this process. We hope to see all Messrs. Fletcher's castings treated in this way, it certainly would do away with an element of dirt in our work-rooms, viz. : rusty iron.

DR. LIMERICK, of Liverpool, in a letter to the *Lancet*, states that :—A young woman aged twenty-seven who (her mother informed me) was born with the two lower incisors through the gums was confined on the 17th of last month of her second child, a boy. He exhibited the same peculiarity at birth as his mother.

Five days later I attended a sister of hers in her first confinement, whose age is thirty-four, and whose child, a girl, was also born with the two lower incisors prominently forward.

A USEFUL device to keep the flask, during vulcanizing, off the bottom of the boiler, is to put an ordinary upholsterer's spiral spring in the vulcanizer. Mr. Butcher, who tells us of this plan, says that it keeps the flask clean, enables it to be easily removed, and prevents the contents getting burnt.

ON the 10th inst., the British patent of the Edison incandescent lamp expires, with a result that the price will be reduced to half or even less than half, for those manufactured by other firms, and which are said to be already produced, ready for the 10th. Some details with regard to comparative cost of electric light and gas may be interesting. According to Professor Robinson, 1 lb. of coal equals 17·2 candles of light per hour; whilst the same coal will give energy to light one incandescent light with 48 candle.power or an arc lamp of 288 candles per hour. The average paid to nine of the principal gas companies is nine shillings per annum, gas being at three shillings per thousand. The average yield per lamp of all the London electric light companies is ten shillings per light, but, on the other hand, the light yielded by the latter is of more candle power and otherwise better than that given by gas. *Invention* gives a letter which states: "There can be no question whatever about the correctness of your contention. Electrical energy at 6d. per unit is equivalent to gas at 3s. per 1,000. The average over the whole country shows this most conclusively. An ordinary gas burner consumes an average of 3,000 cubic feet of gas per annum, an ordinary electric lamp absorbs 18 units of electrical energy per annum; as both give the same light it is quite clear that 18 units of electrical energy give the same light as 3,000 cubic feet of gas."

IT is said that the electric motor is now largely used in metal spinning and machine shops of New York, and doubtless a considerable impetus will be given on the approaching completion of the works of the Niagara Falls Power Company. Many manufacturers will, it is said, move their works so as to avail themselves of this power and have already entered into contracts with the above Company.

We regret to record the death of Mr. J. W. Senior, L.D.S., of Huddersfield, Dental Surgeon to the Huddersfield Infirmary, under very sad circumstances. He was on his annual holiday, and had gone to St. Petersburg. On the voyage there he seems to have got a chill, which was followed by inflammation of the kidneys. He was taken to an hotel and thence to a hospital, but unfortunately he did not recover, but died after a few days. Mr. Senior is lamented by a large circle of friends; he was a member of the B.D.A., and his professional friends will remember him as the hard working secretary at the annual meeting of the Midland branch of 1891. Mr. Senior was a pupil of the late Mr. Scholefield, to whose practice he succeeded. He was forty-one years of age and leaves a widow and children.

Two cases of death during the administration of pental are recorded in the *Deutsche med. Wockenschrift. One* was that of a healthy young labourer, aged twenty-seven. After sixteen ccn. had been administered and the facepiece removed, his eyelids were seen to be open and the pupils rather widely dilated, suddenly his respirations became bad, he became cyanosed, a few deep inspiratory and expiratory efforts followed, and then the breathing ceased. His pulse could not be felt. Artificial respiration, tracheotomy, blowing in air, etc. were tried, but without benefit. *The second* instance was that of a girl, eighteen years of age, who had previously taken both chloroform and bromaethyl. The operation, an iodoform injection, was over in a minute, but though administration had ceased, slight dyspnœa followed. After this followed trismus, alternating with stertorious breathing, pupils were dilated, coreal reflex abolished, pulse small, cyanosis. Artificial respiration and ether injection seemed to have caused a slight rally. Tracheotomy, hot baths, etc., were tried, but after two-and-half hours death followed. No morbid appearances could be found at the post mortem.

The following paragraph from the *Dominion Dental Journal* in connection with the recent action of the Medical Council:—"It may surprise our American cousins to know that we Canadian dentists have no recognition whatever in the old home, and this in spite of the fact that in two of the provinces our matriculation is fully up to the standard required; and that for over twenty years we have had precisely the same system of indentured apprenticeship of four years of twelve months each year, with compulsory attendance upon Anatomy (theoretical and practical), Physiology and Chemistry, and primary and final examinations before boards of examiners elected by the profession. Brother Jonathan was getting favours refused to John Bull's own kids."

WE regret to notice the death of Mr. Charles Baker, the celebrated scientific instrument maker of Holborn. It is said that the business will still be carried on as usual, by Mr. Thomas Curties, who has been in the firm for many years.

ON Monday, October 23rd, Dr. Patrick, of Belleville, gave a lecture at the National Dental Hospital, on "Crowning." He commenced by referring to methods of crowning already in vogue, most of which entail a considerable, some a very considerable, loss of root substance. This weakening of the "substructure" to give attachment to a "superstructure" Dr. Patrick condemns and holds to be altogether needless. Moreover, the ordinary methods of fitting collars really amounts to fitting a cylinder to the top of a cone, there is bound to be a space left between the two, and the greater the depth of the collar, the greater the space. Now, Dr. Patrick believes that by taking advantage of the natural undercut of a root, his crown will be retained, especially when fixed with cement, without the aid of any pins. In preparing the root he does not grind off any of the crown that may be left, leaving this as a natural post, but he bevels off the labial margin of the root. A collar fitted under the normal lingual undercut, can, with a little pressure, be slid over this bevel and will then spring into place. It is difficult to make this clear without the aid of a diagram, but the lingual undercut forms a fulcrum round which the collar rotates the labial bevel and normal undercut form part of the circumference of a circle and so no impediment is offered to the band fitting closely under this. Moreover by thus gradually bringing a crown in contact with the root (instead of forcing it straight on) any surplus cement and air bubbles are driven out.

IN making an all gold crown, he first fits the collar and then stamps up a crown and solders to or telescopes over this. Should a pin be needed, this he contends should be tapered, *i.e.*, be shaped to the pulp canal. Not the least interesting part of his demonstration was an exhibition of several interesting appliances. A pair of pliers —a *multum in parvo*—which besides fulfilling the normal purpose of such a tool and of cutting pliers contained devices for tapering a piece of wire, cutting a thread on this conical piece, and also for making barbs. His pliers for contouring, etc., were also neat, whilst his stamping machine and dies were most ingenius.

His formulæ for gold and solders may be of interest :—

Crown Gold.

Pure gold, 15 parts. Platinum, 1 part.
Cyanide of potassium, 5 parts fused in a coke fire for at least 30 min

Band Gold.

Pure gold, 1 part. Coin gold, 1 part fused.

No. 1 Solder.

Band gold, 89 parts. Pure silver, 7 parts.
Pure copper, 4 parts. Borax, 10 parts, fused.

No. 2 Solder.

Solder No. 1, 89 parts. Pure silver, 7 parts.
Pure copper, 4 parts. Borax, 10 parts, fused.
Solder No. 2 melts over solder No. 1 without fusing it.

Mr. George W. Field, jun., having passed the necessary examination, has been granted the diploma in Dental Surgery of the Royal College of Surgeons, Dublin. The next examination will take place, Nov. 13th.

Journalistic Selections and Abstracts.

LABORATORY PADS AND HOLDERS.

Pads and holders that are non-conducting and will not scorch are very convenient when soldering, baking, etc. These can be easily made by any dentist at a cost of a few cents each. Procure at the plumbers some asbestos paper, such as is used for covering hot-air pipes ; get some of each, the thinnest and thickest grades, use the thin for making holders and thick for bench pads, the latter to protect the bench from hot flasks, soldering, etc. Cut the paper into sizes and shapes desired ; now lay these pieces on some heavy flannel ; cut out the pieces of flannel one inch larger on all sides than the asbestos ; turn the edges up over the paper and stick fast. In using these always have the asbestos side of the holder or pad next to the hot surface.—*Items.*

HOW TO PRESERVE RUBBER-DAM.

By Dr. R. R. Rykert, Attica, N.Y.

Put in a glass jar and fill with water, close the jar up air-tight, and let stand in a cool, dark place, for two weeks, and then rinse the rubber in clean, fresh water. Put the rubber back in the jar and fill with water, and keep as before. I have a sample of rubber that I have kept over five years in this way that is as *good as new.*—*Items.*

TO OBTUND DENTINE.

After the dam is applied I take Dr. Black's 1 2 3 mixture, which is carbolic acid, 1 part; oil of cinnamon, 2 parts; oil of wintergreen, 3 parts, on a pledget of cotton, placing the cotton in the cavity, and with my chip syringe, having a platinum point, draw the heated air from the lamp, heating the nozzle of the syringe red-hot, blow gently on the cotton until the oil is drawn from it. This is done repeatedly, until the cotton looks as though scorched by fire. Now, removing the cotton from the cavity we are able to cut out quite a considerable amount without pain to the patient. This is especially true of the leathery white or light brown decay found in the teeth of young children.—*Ohio Dental Journal.*

SOLDERING ALUMINIUM.

"Der Techniker," July 1st, says that J. Novel, of Paris, recommends the following solders for aluminium:

I. Pure tin - - - - - - - - melting point 250°.
II. 1000 grams pure tin, 50 grams lead, ,, ,, 280-300°.
III. 1000 ,, ,, ,, 50 ,, tin, ,, ,, 280-320°.

These do not discolor the aluminium, but leave its surface quite intact, and are therefore well adapted for the manufacture of ornamental articles, &c.

IV. 1000 grams pure tin, 10-15 grams copper, melting point 350-450°.
V. 1000 ,, ,, ,, 10-15 ,, nickel, ,, ,, 350-450°.

Solders IV. and V. color the aluminium yellowish black; they possess, however, a greater degree of strength, and are especially adapted for the manufacture of such articles as have heretofore been made with tinned iron, white metal, copper, zinc, brass, nickel, &c., as well as for all aluminium articles which may be used in building work, and which are now constructed of zinc, white metal, and lead.

In contrast with the rapidity oxidizable metals aluminium possesses an almost unlimited durability.

VI. 900 grams pure tin, 100 grams copper, 2-3 bismuth, melting-point 350-450°.

This yellowish solder is adapted for the soldering of aluminium bronze. the color may be changed by the addition of more or less copper. By varying the amount of bismuth, a melting-point may be obtained which permits of the use of the soldering-iron. This solder is also adapted for the soldering of aluminium to copper, zinc, brass, iron, white metal, nickel, &c.—*Cosmos.*

CAPPING EXPOSED NERVES.

By Dr. Geo. S. Allan.

About two years ago I exposed a pulp, capped it, protected it, and, as the crown was decayed, I put a Richmond crown on. The tooth broke about a month ago, and in my haste in getting the root ready, I chipped out the little piece of oxyphosphate that I had placed over my capping, and re-exposed the pulp. If I had referred to my book I would have noticed at once that the pulp had been capped, and yet there was not the slightest indication about the tooth that it had been done ; it seemed to me that some method ought to be adopted by which we could tell the condition of things. There is no better way than by having the material itself tell the story. In other words, I would have my gutta-percha or oxyphosphate, whatever I used, a bright red color. It that were generally practiced, no dentist would ever commit the piece of folly that I did, of needlessly re-exposing a pulp that had once been exposed by cutting away the cover. By mixing a little vermilion with the gutta-percha or oxyphosphate you get a perfectly red filling material. This I now use immediately over the cap covering the exposed pulp. A tooth so treated tells its own story, and the danger of re-exposing a pulp once exposed, treated and protected, will be reduced to a minimum. In excavating, if this plan should be generally adopted, the moment one sees that red signal he knows there was an exposed pulp, whether he had done the work himself or some one else had. I added some of the vermilion with the oxyphosphate powder, and found that it did not interfere with the setting when mixed with the acid. I do not see why that should not be a useful point in practice.—*Items of Interest.*

SOME SUGGESTIONS AS TO THE RELATION OF THE TEETH TO EMPYEMA OF THE MAXILLARY SINUS.

By Dr. M. H. Fletcher.

It is not proposed to go largely into the etiology of the intranasal troubles, but give attention more especially to the claims of those who blame the teeth for these disorders. The writers views coincide with those of Zuckerkandl, Schiffert, and others who believe these antral troubles are more largely caused by intranasal disorders, and I wish herewith to present evidence for such an opinion.

This opinion has been arrived at after some years of experience, in addition to the examination of *one hundred skulls*. These skulls were examined with special reference to the relation of diseases of the teeth to the antrum. It is known that the anatomy of the antra of the superior maxillary bones and their nervous supply is such that there can be no disease by reflex action from one to the other as occurs in sympathetic ophthalmia, consequently these cavities are dealt with as separate organs. The statistics then would show two hundred antra instead of one hundred. These skulls were examined for five particular points, *viz.:* First, for abscessed teeth ; second, for septa ; third, for conical protrusion of the roots of the teeth into the antrum ; fourth, for perforation by the roots of the teeth without protrusion ; fifth, for perforation of the antrum from ulcerated teeth.

First. As to abscessed teeth and the connection of such abscesses with the antrum. Only such teeth are mentioned as might most easily produce antral troubles, *viz.:* the three upper molars ; the bicuspids and cuspids being too far forward to be counted in these statistics. I might say, however, that in a number of these skulls evidence of ulceration was found in the bicuspids and cuspid, with no apparent connection whatever with the antra, save in one case. As to the molars, ulceration was found in more than twenty-five per cent. of the skulls, there being in these two hundred examinations, fifty-seven ulcerated teeth, and out of these *fifty-seven possible* cases of perforation by inflammation and its results, we found such to be the case *only four times*, all other cases having perforated the alveolar border and discharged the pus into the mouth, two of them discharging both in the mouth and in the antrum.

In addition to these figures I wish to offer as negative evidence statistics from my own records in regard to the relation of these diseases of the teeth to the antrum, as they have come under my daily observation. I have in the past ten years treated 916 cases of pulpless teeth, 224 of these being superior molars, which, according to the authors named above, could and probably would have caused inflammation or pus in the antrum of Highmore. Out of this number from my own records only one had pus in the antrum as far as I could tell ; and this is the only marked and certain case of empyema of the maxillary sinus caused by the teeth that I have seen.

I have, on the other hand, treated a case in which the teeth were made pulpless, and some of them lost in consequence of disease of the antrum ; and this I believe to be a condition more frequently brought about than the reverse, from the fact that some of the teeth (in the skulls examined) perforated the floor of the antrum with no protuberance, septa, or other covering save that of the mucous membrane.

Such perforation I have found in eight cases, which number I believe to be smaller than it should be could all cases have been thoroughly examined for minute openings. It must be evident that the mucous membrane covering the apices of such teeth, if diseased, could easily cause the death of a tooth by destruction of its blood and nerve supply, which, in its turn, would produce a dental abscess or inflammation about the roots of the teeth, thus producing a difficult case to diagnose. The probabilities are that such diseased teeth having been found connected with the antrum, the teeth have *improperly* borne the blame. In order that these cases can be properly diagnosed, they must needs be examined by one thoroughly familiar with alveolar abscesses and the causes leading thereto, which I claim very few persons can do who are not experienced dental practitioners of acute and accurate observation.

It would seem that these teeth whose roots *perforate the antrum*, where there is usually *neither septa nor protuberance* over the roots of the teeth, are more likely to cause the trouble in question than those which show the tubercle above the roots. This protuberance in question (pictured by Zuckerkandl, and copied by Bosworth) seems to be the prevailing idea of the relation of the teeth to the floor of the antrum, but which from my own observation is quite erroneous, never having seen but one case which approaches this condition. You can readily see these tubercles are not in the centre of the floor, nor in direct line, nor is the floor flat for their reception as Zuckerkandl's picture shows it; consequently his illustration is evidently ideal or exceptional rather than true to nature. It would seem the rational thing, if we are to treat diseases successfully, to first know the anatomy of the parts, then we have the true foundation upon which to build our idea of the pathology. These two points being founded on the truth, our treatment is comparatively easy, whereas if we proceed on an improper conception of the anatomy of a part we are endeavouring to treat imaginary things, and it is only through nature's kindness that our patients recover, for nature follows unchangeable laws.

Some further observations made in regard to the floor of the antrum are as follows: In about twenty-five per cent. of the cases examined small septa or ridges were found to cross the antrum. These ridges you will observe have no relation to the position of the roots of the teeth, although in some cases they were found to come directly over the roots in place of the tubercle, as pictured by Zuckerkandl.

Evidence can be presented to show that abscessed teeth probably do not often break into the antrum nor cause frequent trouble there, by taking into consideration the amount of cancellous tissues found about and above the roots of the molars in almost every case.

By examination of this section it will be observed that the diploë or cancellous bone about the roots of the teeth affords quite ample space for the products of considerable inflammation. These spaces being filled with soft tissue, like marrow, easily take on inflammation, and the products of inflammation may largely displace them. Again, when we have inflammation in this cancellous tissue and about the apex of the root, we have the peridental membrane largely involved. This of itself gives way, as is evidenced by the lengthening of the tooth, and the products of inflammation may easily push down the side of a root and also easily perforate the alveolar process. The alveolar process on the buccal surface over the roots of the teeth being very thin, of course would be quickly perforated, and in many cases the upper parts of roots are simply covered with soft tissues and no bone; whereas the floor of the antrum is usually thicker, and of a dense, horny character, and is also held more firmly in position by the cancellous bone growing from its underside, consequently it would not be perforated as quickly as the alveolar process. It also seems in these cases that the peridental membrane is very largely affected, which is evidenced by an examination of the sockets and bone where there has been an alveolar abscess. This specimen shows the evidence of a perforation in three separate places,—one for each separate root of the superior molar, the two buccal roots having discharged the products of the inflammation in the mouth and the palatal root opening into the antrum at the apex of the tubercle. This antrum also has also a more distinct septum than most that were examined, although I found four or five septa that were even larger than this.

I found one case of which I especially wish to speak, and which has already been mentioned. It had evidence of the worst trouble I found from alveolar abscess. In this case the roots of the cuspid, first and second bicuspids, and palatal roots of the first molar were involved. A cavity had formed reaching from the lateral back to the first molar, and from the alveolar border to the summit of the canine fossa, measuring about an inch in diameter.

A septum seemed to have formed, or had already been formed, between this cavity and the antrum, completely isolating the antrum from any connection with the trouble, although the palatal root of the first molar was involved; yet there seemed to have been no connection of the disease between this tooth and the antrum, although the floor of the antrum could easily have been perforated through the socket of the buccal roots. If there was a discharge from this molar at all it showed no evidence in the antrum, but did show evidence in this external and anterior cavity, which seemed to have been the result of chronic inflammation and collection of pus.

In regard to the proper place to perforate the antrum when demanded. After taking the anatomy of the parts into consideration, it would seem that for several reasons the opening should be made between the apices of the second bicuspid and first molar.

First. Because this locality is the most accessible.

Second. A perforation here does not interfere with the blood or nerve supply of either tooth.

Third. By raising the lip well and slanting the drill upward and backward, you are sure to strike the floor of the cavity almost at its lowest point.

Fourth. If a tube must be inserted in this position, it will be held somewhat in place by the lip whether the teeth are present or absent.

The summing up or rationale then of the evidence herewith seems to be. First, that the anatomical relations between the teeth and the antrum are not generally understood, since the sections here shown give evidence of much more cancellous bone than is usually considered to exist.

Second. Small septa are present in a large per cent. of cases, and these septa or ridges have no direct relation to the position of the teeth.

Third. Statistics seem to show that a very small per cent. of abscessed teeth have any connection whatever with the antrum; this per cent. probably not being over seven to ten.

Fourth. The evidence seems to indicate that the protrusion of the teeth into the cavity is very largely the exception instead of the rule, and that if they do protrude this is not evidence that an alveolar abscess would break there, since these tubercles are usually formed of dense, hard bone.

Fifth. A number of cases have been found where there is a perforation of the bone by the apices of the teeth and no protrusion, but that these apices are simply covered with mucous membrane; thereby the teeth may be affected by inflammation of the antrum, causing their death and loss or a continuance of the trouble in the antrum when such teeth remain untreated, in consequence of this special feature of the anatomy, and that pulpless and inflamed teeth are thought to be the usual cause of antral trouble where the reverse is oftener probably the case.

Sixth. That seemingly the best place to perforate the antrum of Highmore for pus is between the apices of the second bicuspid and first molar.—*Cosmos.*

EVIDENCES OF PRE-HISTORIC DENTISTRY IN CENTRAL AMERICA.

By Dr. R. R. Andrews.

Perhaps one of the most interesting exhibitions of pre-historic dental work that the world has ever known may be seen within a ew months in the Central American exhibit of the Peabody Museum at Cambridge, the result of a recent exploring expedition at Copan, Honduras. This collection is fast being put in order, and will soon be on exhibition. It seems particularly fitting that a brief description of this work should be given at this meeting—the dental section of the first Pan-American Medical Congress—showing as it does the skill of the workmen of Central America, who did the work over a thousand years ago.

In the report of Mr. M. H. Leville, one of the explorers, it is stated that the party found forests growing over the site of their exploration ; that workmen had to cut down these forests, and then the excavations began. A very large temple was unearthed, and near this the homes of the former occupants. Tombs were found under the floors of what appeared to be the living-rooms, and it would seem that these tombs were built before the house was built, in the foundation, for the purpose of burying their dead. The contents of some of these tombs, with the exception of the various small ornaments that were found within, consisted of only particles of the former skeleton, and only the crowns of the teeth covered by enamel. All the rest had turned to dust from age. In some of them the teeth, roots and all, were fairly perfect. Many of these teeth were found to be filled on the cutting-surface, from the centre toward the mesial surface, forming a notch as though the shoulder had been cut in the teeth, and this was quite deep, running one-third up the length of the crown. This was found also in the lateral incisors and cuspids, but not in the bicuspids or molars. It would seem that the teeth of the men were filled in this way, while the women's teeth were filled in three points, deeply filled and beautifully polished. In the teeth of the men, as a mark of distinction perhaps, a hole was drilled and a piece of green jade inlaid. This piece was circular and beautifully polished, and inlaid in the hole that had been drilled or bored in the front surface of the enamel. These inlays varied from one-eighth to three-eighths of an inch in diameter. In one of the teeth, the left upper cuspid, there was a circular piece bored out of the enamel, making a hole three-sixteenths of an inch in diameter and one-sixteenth of an inch in depth. It has no setting, but there are traces of a dark red cement material still adhering to the sides of the hole, and this material may have been hardened and used as an ornament instead of jade. These teeth are all more or less covered with a deposit of tartar, showing that after taking all the trouble to ornament them, they were apparently never cleaned. In this collection of jade inlays there are perhaps a dozen in perfect condition, and although they were put in over a thousand years ago, and with the rudest implements, the work would be considered a credit to the most skilful workman to-day, with all the modern appliances for this kind of work. I carefully examined these specimens with a magnifying glass, and the fitting was very perfect. In most of these the cement had kept the setting in place in the most perfect manner. In two or three of them the piece of green jade was loose, so that it and the cavity in which it fitted could be carefully examined, and so could be seen how perfectly one fitted in the other, only a little film of some kind of a white cement separating the tooth. In no cases could I find any traces of decay around the inlays, although some of them had been in place a long time during life, as is clearly shown by a thin film of tartar covering the surface of the enamel. Is not this the first record of an inlay, having been placed there over a thousand years ago ?

With the description of one other specimen I have done. This is by all means the most interesting of all these specimens from Copan. It is a superior left lateral incisor, made from some kind of a fine dark stone, taken with other teeth which had inlays from one of the skulls found in a grave there, and Mr. Leville, who found it, assures me that it was taken from the socket of the inferior left lateral incisor, where it had been implanted for over a thousand years. There were no bands or anything of the kind to hold it in place, but that it had been in place and in use is clearly shown by a considerable deposition of tartar upon it. But for its color it would be a very fair representation of a lateral incisor, the root being smooth and rounded, like the root of a tooth I have no doubt that this is the earliest case of implantation on record. The entire collection from this exploring expedition in Central America is one of very rare beauty, and it would well repay a visit to the Peabody Museum in Cambridge.—*Cosmos*.

NEARLY EXPOSED PULPS.

By Dr. Jarvie.

This is an old subject and the treatment of it an old story. I treat now such cases as have been presented in the paper pretty nearly as I have done for a number of years past. In my early attempts to save alive exposed pulps, I met with such unfavorable results that I did not persevere in the treatment very long. I came to the conclusion that where there was a probability of the pulp dying under treatment—and the first intimation of the death of the pulp would be by periostitis or by an abscess—it was infinitely better to extirpate the pulp in such cases and fill the root, when there was not one chance in fifty that we would have trouble afterwards. It never seemed to me wise to attempt to save pulps alive after they had been exposed for any length of time, or if they had given pain from inflammation or congestion. I can hardly agree with the essayist in his judgment of the cause of the death of pulps, where there is, as he said, a slight amount of dentine between the cavity and the pulp. I cannot understand how any expansion or contraction of a plastic filling could cause pressure upon the pulp sufficient to affect it one way or the other. I think that where pulps die under treatment such as he has suggested, where oxyphosphate or oxychloride fillings are used, it is the escharotic nature of the filling which, being persistently kept in contact with the pulp, has caused its death. I do not think that sound dentine would yield sufficiently under the slight pressure that there might be to cause any impression whatsoever on the pulp. My treatment of cases where the pulp is nearly exposed, and where the layer of dentine is quite thin, is this: I first antiseptize the cavity with carbolic acid, and then with an air syringe evaporate it, and then I place where I think the dentine is thinnest, asbestos cloth so as to completely cover the nearly-exposed pulp. I have followed this treatment for a few years, and with satisfactory results. I do not remember now of the death of the pulp under such circumstances. I am speaking of cases where the pulp is not exposed, as the essayist mentioned in his paper. I do not refer to those where, if you should remove the next layer of decayed dentine, you would expose the pulp; I mean where there is a very thin layer of partially-sound dentine, not softened; disintegrated to a certain extent, yet not decayed. The asbestos cloth, which is the best non-conductor I know of, accommodates itself exactly to the shape of the cavity, and I think it is very valuable for this purpose.—*International.*

FILLING ROOT CANALS WITH COAL WADDING.

Dr. E. Förberg, of Sweden, observes in the *Odontoligisk Tidskrift* that after experimenting with all other material, he has found that for filling roots coal wadding serves best the manifold purposes of an antiseptic filling. The coal used seemed to be a modification between diamond and graphite.

Like the first it is a non-conductor of electricity, and an extremely bad conductor of heat. With the graphite it has in common the quality of slow burning. Like the charcoal it possesses, in high degree, the quality of absorbing gaseous substances, and even exceeds the former on account of its greater porosity. This porous, soft, and flexible coal, is in itself a disinfectant, but is reduced to a still more perfect antiseptic, in its manufacture, by the addition of pure boric acid which pervades the small fibres.

For deciduous root canals coal wadding is the most suitable filling material; it does not prevent the resorption of the roots. It is used in treating the pulp, tamponing extraction wounds, in prolonged operations, such as pulpitis, periodentitis, pyorrhea alveolaris, &c.—*Items.*

SEVERE MALLETTING.

Severe malletting in filling a tooth should be avoided.

1st. The most thorough condensation of a filling should be next the wall, but heavy blows from the mallet tend to curl the gold up, and thus cause the gold to leave the wall.

2nd. Heaving malleting often produces a loose rolling filling by balling the gold. Many more gold fillings than we suspect, whether filled by pressure or by blows, have this fault, causing the filling to leak, thus laying the foundation for future decay. A filling should be tested during its manipulation. The slightest rocking should condemn it; for it cannot be remedied. The only way is to remove it at once and begin it again.

3rd. Heavy blows often check the enamel. It may be so slight it cannot be seen at first. But the check is soon to become a crack, and the crack a break.

4th. Severe malletting sometimes produces such over condensation as to burst the wall. In our zeal for a very hard filling, we have more than once seen a piece of enamel thrown off by this means, just as we were congratulating ourselves that we were doing a good job. Such a check will not show itself till we are polishing our nice filling, and then, perhaps, it is so slight we persuade ourselves it will never amount to much. But it will be sure to increase, and, perhaps, destroy both tooth and filling.—*Edit. Items.*

REVIEW.

ANÆSTHETICS, AND THEIR ADMINISTRATION. By FREDERICK W. HEWITT, M.A., M.D. (London: Griffin & Co.)

Until quite a recent date, the subject here dealt with has been complicated by so many vexed issues, and such gaps in the continuity of its facts, that the dearth of really authoritative and complete works on Anæsthesia has hitherto been no matter for surprise. Monographs on the subject have, up to the present time, been either the record of one man's work, or, if completeness has been attempted, their practical character has necessarily suffered. In the last few years much has been done to elucidate the many problems of the subject, alike from the Clinical as from the Physiological side, and it has been reserved for Dr. Hewitt to bring forth a work at once clear, practical, complete and scientific. The scope of this book is modestly stated to be purely practical, and we may as well say at once that in this the author has eminently succeeded. By reference to its pages the practitioner may at once discover how best to deal with any particular case in the light of knowledge which is brought thoroughly up to the present day. The methods of administration of the various anæsthetics are described with marked clearness and comprehensiveness, and the same features appear in the discussion of the treatment of the various "difficulties, accidents and dangers" met with in connection with anæsthesia. Of the complete character of the book we can only say that we could discover no branch of the practical side of the subject which was undiscussed, and that no paper or work, having the least important bearing on anæsthesia, seems to have been unconsulted by the author, as a glance at the references to other authors will show. Amongst such quoted work is included much valuable matter from the principal foreign writers on the subject which has not been before translated into English. But the main value, and if it may be so expressed, the charm of the book lies in the fact that Dr. Hewitt's own careful labour for ten years is to be found in its pages. One thus meets with original observation on the most trustworthily scientific lines in every chapter. The author's plan of producing anæsthesia by means of nitrous oxide and oxygen is a case in point. It is most clearly discussed, and should be read by all who have to deal with anæsthesia for dental purposes. Dr. Hewitt, however, never permits his own clinical experience to stand out more prominently than it deserves to do. The sound and moderate nature of his conclusions is beyond praise, and his anxiety to give the full value to the work of others is everywhere fully manifest. Although the purely physiological side of the problems of anæsthesia is not separately discussed, and is given no prominence, the clinical facts set forth so harmonise with our latest physiological knowledge that one wonders why the physiology of anæsthesia has been such a matter of obscurity and disagreement. Dental anæsthesia, and matters connected therewith, receive full attention, so completely up to date as to include the use of Pental and of gas —and—air. The descriptions of the various apparatuses are commendably lucid, and the book abounds in the clearest of illustrations. Many of these are new, and will be of the utmost value to the student, such as, for example, the pictures of gags in position, and of artificial respiration. As an instance of Dr. Hewitt's extreme love of detail, is may be noted that, whenever the size of the pupil is referred to, this is given by a dot of the exact size, as well as in millimetres. Each anæsthetic is clinically illustrated by most carefully selected and recorded normal and abnormal cases from the author's own notes, thus rendering the book most pleasant reading, and giving it that high scientific value which distinguishes it from an ordinary text-book. The style is pleasing and requires no effort to follow, the arrangment of the book is admirable, the printing is all that can be desired, and the indexes are most exhaustive, extending to twenty-four pages, a most necessary requirement in such a book. It may seem to our readers that we are unduly lavish in our praise, and so, if fault has to be found, we may say that perhaps some would grumble on the score of too much detail being provided for the willing but mortal student. But, as we have said, the functions of a text-book are here far exceeded, and it is a matter of much congratulation that this is so. In a word, this is by far the best book yet produced on the subject, and if it dealt with any other branch of medical knowledge would command at once the widest recognition. The public have not, however, yet learned to estimate the anæsthetist, he who daily carries lives in his hand, at his proper importance. Such books as this will do much to improve the status of that branch of medicine which, to our minds, has more than any other justified its separate existence. We know not whether Dr. Hewitt's epoch-marking work may be regarded as forming a fitting close to the labours of Snow, and all those other observers, who, by keen vision, patient care, and untiring industry have pieced together and built up the science and art of artificial anæsthesia, or whether it may better be looked upon as the beginning of an age of deeper and surer knowledge of this fascinating subject than that which is passing away.

BOOK NOTICES.

Dental Catalogue.—Messrs. Claudius Ash & Sons' New Edition, 1893.—A thick volume of 656 pages, and well illustrated, it forms a usual book of reference, not only for the manufactures of an important firm, but also as showing the advances made in the different instruments used in dental practice.

English Illustrated Magazine.—Published at the *Illustrated London News* Office. The change of publishers is accompanied by a return to the methods of the more palmy days of this periodical, on which we may congratulate the publishers.

The Stœchiological Cure of Consumption and Diseases of the Respiratory Organs.—Few letters to a patient, by John Francis Churchill, M.D. Third edition. Published by David Stott, London.

Letters from a Mother to a Mother on the Care of Children's Teeth.—By Mrs. M. W. J. Published by The Wilmington Dental Manufacturing Co., Philadelphia. Fourth edition. The fact that this small book has already reached its fourth edition shows that there is some demand for this form of popular dental literature, and that this book has met the demand. It is pleasantly written and contains much good advice, which it would be well if mothers followed in regard to their children's teeth. It is pleasant to note that the authoress publishes her work *pro bono publico*, and avoids self-advertisement by writing under a *nom de plume.*

Diseases and Injuries of the Teeth, including Pathology and Treatment.—By Morton Smale, M.R.C.S., L.S.A., L.D.S., and J. F. Colyer, L.R.C.P., M.R.C.S., L.D.S. Published by Longmans, Green & Co., London, price 15s. Large crown 8vo, with numerous illustrations. This important work is in the reviewer's hands.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents]

THE DENTAL HOSPITAL,
LEICESTER SQUARE, W.
October 11*th*, 1893.

To the Editor of the "DENTAL RECORD."

DEAR SIR,

You will no doubt permit me to answer a letter which appeared in the July number of the *Dental Record* from Mr. T. E. Constant, in which he takes exception to certain words in the paper on "Nitrous Oxide" that I read before the Dental Hospital Student's Society, a report of which had appeared in your April issue.

A very severe illness, and subsequent absence from home, has prevented me asking this favour previously.

Mr. Constant in the first place, eulogizes my paper, then charges me with "purporting to quote" from his pamphlet a certain statement which, he says, is nowhere to be found therein. My best answer is simply to quote chapter and verse, viz.: "How to Give Gas," by T. E. Constant, page 22, lines 19–20, and lines 22–23.

Again, Mr. Constant asserts that Mr. Woodhouse Braine does, or at any rate did, administer gas from *behind* the patient, and calls attention to the fact that I *erroneously* mentioned Mr. Braine's name in my paper as one of those anæsthetists who usually stood at the *left side* of the patient. To prove my correctness and Mr. Constant's error, as regards this point, I have interviewed Mr. Woodhouse Braine, and he says, that having administered gas for nearly a quarter of a century, he always (except at the *operator's request*) used the method I ascribed to him.

Subsequently, Mr. Constant credits me with "severely deprecating" the use of the "right hand for manipulating the facepiece." Now, all I said was that "*from a dental operator's point of view*," under certain conditions which I mentioned, "it was *better* to have the anæthetist at the left side."

But I acknowledge that I did "severely deprecate" the laying down by Mr. Constant of his views as laws, when so many of our best anæsthetists differ from his methods.

Thanking you in anticipation for doing me this favour.

Believe me, yours, &c.,
W. BORRETT WHITTINGTON.

THE DENTAL RECORD.

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Original Communications.

YET ANOTHER PROFESSIONAL HOLIDAY.

The World's Columbian Dental Congress.

BY GEORGE CUNNINGHAM.

(Continued from page 488.)

SOME members of the Odontological Society of Great Britain may be interested in the following comments on three items which, we have reason to believe, figured in the discussion of the World's Congress ·Auxillary circular, and led to the rescinding of the resolution of a previous meeting at which delegates had been appointed to the Congress. Firstly, as to what we may briefly characterise as the erroneous statements of America being the birthplace and home of scientific dentistry, I made enquiries in many directions; but found that very few had ever seen the circular in question, and not a single one of those who had perused this wretched and unfortunate publication, but condemned the objectionable passages in the strongest terms. Secondly, apprehension was expressed as to the two public meetings which were arranged to be held in conformity with the general rules appertaining to all the congresses. It is true the public were admitted to the gallery during the general meetings, but were absolutely excluded from the Sectional Meetings and the Clinics. As a matter of fact, the attendance in the gallery was of the very scantiest, and consisted mainly of the relations and friends of dentists and a few dental students, Indeed, I scarcely think that the Dental Executive quite carried out the intentions of the Congress Auxillary Executive. I certainly anticipated that the two popular evening meetings would have been devoted to the treatment and discussion of some features of dentistry from the standpoint of public interest, such as a lantern lecture on dental hygiene, or a discussion under the superintendence of the committee on the care of the teeth of the poor. As a matter of fact, neither of the evening general meetings, though well attended by the members of the Congress, were in any sense popular; but were devoted to lantern exhibits illustrating purely professional subjects which were treated in a way worthy of the Odontological Society itself. Thirdly, with regard to the Women's Branch, "The officials of the World's Columbian Dental Congress have shown the most favourable disposition towards women dentists, but the women themselves have been slow to respond," as mentioned by the recording secretary in her report to the meeting of the Woman's Dental Association of the United States, held during the progress of the Congress. As far as I could gather, about twenty to twenty-five women dentists attended the Congress, all of whom were members of recognised dental societies, with the exception of three foreign representatives. They contributed some papers of no uncommon interest in several sections, including one on "Mercuric Chloride as a Germicide," which showed a familiarity with the operations of bacteriological research as yet possessed by few dentists.

It is curious how such an episode as this unfortunate circular may warp one's common sense, culminating in attributing ulterior motives to even commonplace incidents. It seems that the official letter from the Odontological Society of Great Britain was returned from America unopened. Some of my friends, more or less touched with Americaphobia, seemed to think that this was a part of the wily tactics of the Congress Executive, and asked me if I could give any explanation of the fact. I confidently expressed the opinion that it was a matter entirely connected with the postal service. I therefore naturally took an early opportunity of ascertaining the true history of the returned letter. The letter was addressed to the President of the World's Columbian Dental Congress at Chicago. No such person was known, or could be found, by the postal authorities; and therefore, after a time, as is usual in such cases, the letter was returned to the sender. It was then redespatched to America, but this time addressed to the president personally, at his home address in Boston, where, of course, it duly reached him, but only a few days before the beginning of the Congress. I know that it was a matter of great regret to him, firstly, that the letter had miscarried; and secondly, that in the midst of pressure of work he had not had the opportunity of sending an official reply before the Congress.

Now to return to our "moutons," no disrespect meant, most of our friends were busily engaged on executive work or in connection with the meetings of the National Association of Dental Faculties and the National Association of Dental Examiners, which were being held antecedent to the Congress. These two bodies are doing extremely good and useful work, especially in standardising the dental education in the different States. Their existence is a practical recognition that leaving the control of higher professional education to bodies with naturally diversified State laws is bad, and that such matters are of federal, or as we should say, imperial concern. It is indeed a matter on which we may congratulate ourselves that there is no necessity for analagous bodies in this country, owing to the absolute identity of the dental laws in the several parts of the United Kingdom, and the practical uniformity of the dental curriculum in all our dental educational institutions. It might, however, be worth while to consider the advisability of an occasional conference of the executive or delegates from our different dental schools to discuss how far, and in what respects, the present curriculum, framed many years ago, might be improved.

The following quotation from the proceedings of the latter of these two bodies as to the number of students during the Session 1892-93 is a striking contrast to the number of students resently attending our own schools, which is so small as to give rise to the very serious question whether the increase in the number of students is proportionate to the requirements of the community. "Session 1892-93, number of students in recognised schools: Freshmen, 1,429; Juniors, 927; Seniors 433; Graduates, 320; Post-Graduates, 44 (one school not reported), Total, 3,153. In unrecognised schools the number of students was: Freshmen, 111; Juniors, 54; Seniors, 22; Graduates, 20." Nor does this statement quite exhaust the actual number of students, for there are probably many studying with private practitioners, who might fairly be ranked as students, especially for the purposes of comparison with the number studying in this country; since it must be remembered that in the United States it is still possible for a student to become a legally qualified practitioner without necessarily passing through a dental college. In this respect British legislation is much in advance of even the best State legislation in the United States, since it is impossible for any student of dentistry to become a legally qualified practitioner without (1) passing a preliminary examination in arts similar to that required of medical students; (2) four years spent in professional education, which includes three years practical instruction in mechanical dentistry under a registered dental practitioner, or under the direction of the superintendent of the mechanical department of a recognised dental hospital, and two years devoted to lectures and practical work, attendance being obligatory both at a medical and a dental school, before he can enter for the qualifying examination which is always conducted by one of the licensing corporations having no connection with the teaching bodies.

We had plenty of opportunity of comparing notes on this and other matters with the various practitioners who were now beginning to throng the reception-rooms of the Columbian Dental Club. Our acquaintance with the American practitioners was simply increasing by leaps and bounds. The weather was hot enough to make us revel in the cooling lager, or enjoy the soothing effects of a cigar, seated in the shade, surrounded by good fellows who betrayed not the slightest trace of animosity, even in discussing our international dental differences. Yes, the Columbian Dental Club was indeed a great institution. It was very conveniently and centrally situated, and became the general headquarters of every dentist who visited Chicago, and at times, even its large rooms were thronged to almost overcrowding. From early morn, one might almost say, to early morn, the Chicago dentists thus kept open house to one and all. It was not a palace like the Union League Club or the Chicago Athletic; it was not luxuriously furnished, but it was spacious, comfortably equipped, and served its temporary purpose so well that many will regret that it could not become a permanent institution. Not the least best remembered feature of the Congress to most visitors will be the pleasant days and nights spent in or around and about the Columbia Dental Club, nor will they readily forget the valuable and innumerable services of the omnipresent managerial, Brophy nor those of his coloured henchman "the Commodore."

You, Mr. Editor, have well remarked that "there is the social side of a meeting, under its soothing influence, begotten largely of better knowledge, angularities get rounded off, annoyances allayed, and mutual appreciation heightened." The Club contributed enormously to the development of the social side of the Congress, far more, indeed, that any amount of separate receptions and more or less formal entertainments could have done. It is to be hoped, therefore, that it is but the forerunner of a similar institution at the next dental congress, wherever that may be. Paris, 1900? Well, perhaps, but why not before? Many a time during this professional holiday, both Americans and foreigners have spontaneously remarked that the next dental congress should be in England, and why not? I frankly admit that I discouraged any such anticipations, mainly because so many British dentists regard an independent dental congress as inimical to the dental section of the International Medical Congress. Is not our policy in this regard rather contradictory, not to say inconsistent; since it is a well known fact that as a profession we have discouraged, nay prevented, the formation of a dental section of the British Medical Association, because that would interfere with the prosperity of our independent Dental Association and its independent Annual General Meeting? As a lover of all good things, I am an advocate for both, and see no reason why we should not hold from time to time independent international congresses, such as are now held by many sections and specialties of the medical profession, while according our fullest support to all international congresses where dentistry is concerned, or is capable of playing an important part, such as the International Medical Congress or that of Hygiene and Demography.

I remember urging upon a friend, as a reason why he should give the Congress his fullest support by accepting an honorary officership, that the membership was to be confined to legally qualified and reputable dentists (as defined in the code of ethics in the American and Southern Dental Association) residing in the United States, and such dentists residing in foreign countries who were certificated eligible by the honorary officers of their respective countries, to which his reply was—"Oh, yes, that all looks very well on paper, but they won't carry it out." While seated at the Club one night, I received a message from the Secretary-General requesting me, in the absence of either of the foreign secretaries, to interview a gentleman who could not talk English, but wanted to make use of the Club and enrol himself as a member of the Congress. He described himself as a dentist practising in Belgium, and on my asking him if he had the necessary certificate as to his eligibility from the honorary officers in Belgium, he said that he had not, and that he had never heard of the regulation, as he had been in Chicago since the opening of the Exhibition. On his learning that none of the officers representing Belgium were present, he very kindly volunteered to give an address on behalf of Belgium at the opening ceremony. I naturally enquired how it was that he, a dentist, had been able to be so long in Chicago, when he informed me that he had charge of an exhibit which was creating great interest at the World's Fair, and exhibited quite a bundle of cards of many eminent American practitioners, who he said had expressed great admiration of his exhibit. As I knew that several of the gentlemen, whose cards he produced, did not talk French, and he did not talk English, I did not attach much importance to that. Further inquiries elicited the fact that he had also charge of a perfumery stall, that he belonged to a family of seventeen, all dentists, and that he was the author of a "Guide Pratique d'Hygiene and d'Art Dentaires," a copy of which he kindly presented to me. I need scarcely say that his name and address was prominent on the title page, followed by the following astounding catalogue of his qualifications :—"Dentiste agréé de différentes écoles de la province de Liége, Spa, Ostende, &c. ; Plusieurs fois breveté, membre de jury hors concours ; Médailles d'or et diplomes d' honneur aux Expositions d'Amsterdam, 1883 ; Londres, 1884 ; Ostende, 1887 ; Nice et Tunis, 1888 ; Paris, 1889 ; et Liége, 1890 ; Récompensé par le Gouvernement Belge et la ville de Liége." This tissue of self-fabricated honours was followed by the announcement that the manuscript of this work had been awarded a prize in different exhibitions. A glance at the preface shewed that his previous pamphlet on the same subject had met with a reception at the hands of the public which surpassed all his fondest hopes—40,000 copies had been disposed of (enlevés) in a few months—and that he made no pretence to science, but desired simply to let the public profit by the fruits of his own experience and practical notions, which study had enabled him to acquire from the most authoritative sources. I need scarcely say that the application of this philanthropist was promptly rejected. Notwithstanding this rebuff he managed to secure, in some way or other, about the second or third day of the Congress, a ticket of membership as a foreign member. He was, however, soon after recognised; his ticket of membership was cancelled, and his magic button promptly confiscated.

It is therefore worth noting that the executive of the World's Columbian Dental Congress honestly endeavoured to carry out the ethical restrictions it had imposed as to membership; indeed, so far as I know, it is the first time on record in which any congress, either medical or dental, has endeavoured to rigorously exact any such ethical qualification as to membership. Of course it is almost impossible, in the pressure of business, especially during the earlier days, to absolutely prevent some fraudulent registrations. During the course of the Congress it transpired that some six persons, four from the United States and two from abroad, who had succeeded in registering as members, were afterwards found to be ineligible; their membership was therefore annulled and their subscriptions returned. Before the final authoritative list of members is published, it is the intention of the Executive Committee to further overhaul the list, and return the fees of those whose membership may be cancelled. There can be no doubt that many a quack and advertising practitioner, especially from foreign countries, is admitted without cavil to these large congresses; and we would especially recommend the adoption of this practice of placing the responsibility of foreign membership on the honorary officers of their respective countries, as otherwise angels are sure to be entertained unawares.

The conjoint dental societies of Chicago gave the Congress a good send-off in the shape of a reception at Kinsley's (the Whitehall Rooms of Chicago). It was indeed a splendid success, mainly owing to the number and the attractions of the ladies present, though, perhaps, I say it as should not, since I learn from a comment in the *Dental Tribune* "that England's representatives (*incog.*) did much to remove the formal frigidity of the atmosphere by starting up a few dances."

About this time the Executive Committee requested me to undertake the duty of replying on behalf of Great Britain at the opening ceremony. Having already, in conjunction with my colleagues, declined my appointment as honorary secretary, I felt a considerable delicacy in doing so, until I was assured by the other representatives of Great Britain present that some one ought to reply on behalf of our country and that I should do it.

The World's Columbian Dental Congress was formally convened at the Hall of Washington, in the Memorial Art Palace, Chicago, Monday, August 14th, 1893. The proceedings of that day were of the most auspicious character, and from that moment forward there was no doubt as to the success of the Congress ; the attendance was magnificent and truly international from the unusual number of representatives from foreign lands. President Bonney, of the World's Congress Auxiliary, delivered an address, which was short but to the point, welcoming us to Chicago and introducing Dr. Walker, President of the Executive Committee, who in a short pithy pointed speech introduced the various officers of the Congress. It must have been rather a trying introduction I thought for some of them, but it is a useful although a somewhat uncomfortable kind of ceremony. The Secretary-General, Dr. Harlan, then read the resolutions creating the Congress. For obvious reasons, although it was no speech, the speaker was hailed with a perfect storm of applause, an eloquent tribute of appreciation of an infinity of hard work. In the absence of the Hon. John Temple Graves, who was to have delivered an address, entitled "The Needs of Dentistry from the Public Standpoint," the Congress found an eloquent and able substitute in the person of Dr. Crawford, of Nashville, who delivered certainly a stirring address of welcome. Both the matter and the delivery, a Britisher would say, were essentially American. He would not be quite right, because it is only one of the types of American oratory. We all try to rise to great occasions and usually fail—there was no kind of failure about this speech. But it must be admitted that, to the timid foreign representative, there is something truly appalling in hearing in stentorian tones, full of earnest conviction, "that quite seventy million hearts to-day are expressing through the orator their universal welcome to the dentists of the world." It is a sublime thought of course, but how difficult to live up to it. Then when he asked us, gentlemen from the foreign countries, "to grasp his hand in imagination and feel the pulsation of the great heart of the American people, beating in unison at this very moment." I felt almost afraid, for alas ! I had no prepared speech committed to memory, and the orator's eloquence made me all the more conscious of my own inadequacy. The inaugural address of the President of the Congress, as may be gathered from the abstract already published in this journal, was worthy of the great occasion; but he, perhaps, most shewed his pre-eminent qualities for the office in the graceful speeches with which he introduced the various foreign representatives. The first on the list was Great Britain, and indeed it was a moment worth living to listen to the President's kindly remarks and the astounding reception with which they were endorsed by that vast audience. As an actor in that, to me at least, ever memorable scene, I do not mind admitting that I was almost overcome. I never anticipated that under the circumstances our country's name could have met with such a reception—honestly, I really seemed to feel the pulsation of the great heart of at any rate the American Dentists, and I endeavoured to rise to the occasion, and, according to the *Cosmos* in the following way:—

[Reference, "Mr. President, Ladies and Gentlemen," p. 704 *Dental Cosmos*, September, 1893, to "these remarks," p. 705.]

That I did not fail altogether in my object is apparent from the following quotation, which I may be excused making, from an editorial in the daily edition of *The Dental Review*:—"The hearty reception that was extended to Dr. Cunningham, of England, both by the chair and the audience, and the feeling response which it brought forth from our British brother, will go far towards healing any breach which may have existed between the dentists of the two countries on account of the action taken by the English societies in regard to the Congress. As Dr. Cunningham said, it was an 'accident' which he hoped would soon be forgotten. We certainly have no ill-will against the dentists of England, and we especially wish to welcome those who are with us this week. We can forget a difference of opinion as quickly as any, and as for those who sought to stay in England we have only the words of their worthy *confrère* in his response—'they will lose more than the Congress will.'—C. N. J."

Dr. Grevers replied for Holland and the Association of Dentists of that country; Dr. Richter, for the German Association of American Graduates in Germany and the Berlin Dental Association; Dr. Zsigmondy, for Austria and Hungary; Dr. Barrié, for France, presenting a joint address to the Congress from the two dental schools of Paris and their respective Dental Associations; Dr. Portuondo, for Spain; Dr. Mela, for Italy and the Odontological Society of Italy; Dr. Caracatsanis, for Greece; Dr. Burnett, for Uruguay; Dr. Flagg, for Paraguay; Dr. Alfred Burne, for Australia and the Dental Association of New South Wales; Dr. Roussey, for Switzerland; and Dr. Whitney, of Honolulu and Dr. Kimball, of Shanghai, for Americans in foreign countries.

Thus ended a long, but interesting ceremony, certainly the grandest and most dignified opening dental function which I have been privileged to attend.

(To be continued.)

CONGENITAL CLEFTS AND THEIR TREATMENT.*

By Mr. L. S. Austen.

Mr. President and Gentlemen,

In the paper I propose to read before you to-night, I shall endeavour to discuss some of the Congenital Deformities of the Oral Cavity, as far as possible from our special point of view, that is, as students of dentistry, and, therefore, I shall do my best to treat of it in as practical a manner as possible, for after all said and done, our work is, and always must be, of an eminently practical character; not that I in any way wish to underate the value of a sound knowledge of theory, for I am sure, and all must agree, that the better the theory is understood and the clearer the headwork reasoned out, so much better will be the resultant man, whether in private practice or fulfilling a hospital appointment.

Our subject is one that interests us, or ought to, at all stages of our career, but at the same time it is a subject to the details of which I fear but somewhat scant attention is paid by students, save in the few months previous to that in which we undergo, at any rate, for most of us, a dread ordeal.

Pursuing my intention of treating of this matter, as far as possible from the dental surgeon's side, I shall almost entirely confine myself to those deformities in which our advice may be asked, or our services called into question, and I shall relegate into a secondary position those other interesting abnormalities which we are not likely to see, or if we did, treatment from our hands would be undesirable or impossible.

Mr. President and Gentlemen: You will have gathered from the above that I intend, primarily, to touch to-night on the subject of Clefts, or Congenital Fissures of the Palate and Lips, and that we may start at the beginning I must here digress to discuss briefly the normal anatomy of the parts under question.

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* A Paper read before the Students' Society of the Dental Hospital of London.

The palate is a horizontal partition dividing the nasal cavities from the oral, and forming the roof of the latter ; it consists of a hard, or bony portion in front, and a soft, or muscular part behind, for the purpose of establishing, or shutting off communication between the nose and pharynx by means of its several muscles, viz., above, the lev. palati, tensor palati ; below, palato glossus, palato pharyngeo, and intermediate aygos uvulae ; mucous membrane forms the remainder of the velum, which, together with the hard palate, receives an excellent vascular supply, a fact favourable to primary union if the scalpel be used.

The hard, or bony portion, is formed by the palatine and alveolar processes of the sup-maxillary bones, the two palate bones and intermaxillary bones, with the vomer forming an articulation between the two sup-maxillary bones above.

Mr. Oakley Coles gives the following measurements of size taken from a large number of skulls :—

	Length.	Width.	Height.
European	49m.	35m. at 2nd bicuspids	9m. at 2nd bicuspids.
Mixed Races	54·9m.	35m. ,,	12m. ,,

You will observe that I neglected to mention how many intermaxillary bones, and this is a point that needs a little attention when treating of congenital clefts. In about fifty per cent. of adult skulls examined, traces of an maxillo-intermaxillary suture can be distinctly seen ; but Professor Albrecht and others go even further, and point out that in the infantile skull traces of a suture exist, running up the centre of each portion of the intermaxillary bones, and hence making, as they say, *four* instead of two ; this view of the matter has received investigation at the hands of many of the best anatomists of the day, and now with the evidence before us, I cannot think but rightly an accepted fact granted, thus followers of the above school divide the palatine bones into an exo-gualtrion, or outer part, *i.e.*, the maxilla itself, a meso-gualtrion or middle, and an endo-gualtrion or inner part. This division being granted when considering alveolar and palatal clefts, we come to the question of which suture is the one through which the division passes, between the maxilla and intermaxillary, or between the component parts of the intermaxilla. Albrecht and Sir William Turner strongly support the latter view, and for the following reasons: that in alveolar hare-lip a small splint of bone is found quite distinct on the outer side of the cleft, and that, coincidently with this, we find a small tooth (named by them precanine) on the outer side of the cleft, and this occurs in such a number of cases as to forbid the possibility of doubting the result of their conclusions. In connection with this I might perhaps mention that it is therefore supposed to be the missing incisor, for, as maintained by Albrecht, the existence of alveolar cleft prevents anastomosis between the naso palatine and post palatine arteries, and hence he ingeniously suggests that the vascular supply of the os incisioum being greatly increased, Nature having the material at hand, proceeds to restore a lost member. Time will not permit of a fuller discussion of the interesting theories, and I will therefore return to the first and most important deformity of which I intend to treat, viz., Cleft Palate. This abnormality is due to deficiency of juncture between the palatine processes from the maxillary bones during foetal life. The defect may vary from a cleft extending from the tip of the uvula right forward, through the hard palate, and thence to communicate with a double hare-lip, or simply present as a small notch in the uvula, or any intermediate form between these severe and simple forms. In the more serious variety, the vomer often appears attached to the side of the cleft, and by observers is said to be generally adherent to the side opposite to that in which the cleft appears in the alveolus, and since hare-lip most frequently occurs on the left, the bone is therefore usually found attached to the right margin.

The soft palate only is the sufferer in the greater number of cases, congenital clefts of the hard palate alone being extremely rare, as are clefts affecting the forepart of the mouth only.

The causes of clefts are, of course, somewhat wrapped in mystery; we often see them associated with other, and sometimes, serious abnormalities and deficiencies, but these give no clue to their origin. Heredity, not however directly, *i.e.*, from father to son, undoubtedly predisposes to the affection, and knowing, as we do, how dental abnormalities persist in certain families, we must not be surprised if parental influence tends to reproduce the deformities above mentioned. By some "maternal impression" is looked upon as predisposing, but although a few really remarkable, and presumably authentic, cases are recorded, knowing how readily the ignorant attribute other defects to this cause (two patients of my own stoutly upheld this view of the matter), such statements must, I think, be received with caution, and not relied upon until more efficient data on the subject are to hand. But it is quite likely that some interference with the normal health of the mother may rebound to the misfortune of the child; only this week, in the *British Dental Association Journal*, a case is reported in which a sharp attack of scarlet fever in the mother presumably caused a honeycombed appearance of the temporary teeth in the child. By others, from the result of observation on domestic and domesticated animals, a deficiency of true salts during gestation is assumed to have great influence in their determination, while Mr. Sutton suggests that they are an instance of "atavism" or "hark back." In fish, the buccal and nasal cavities are one, while in birds and lizards, fixion of the hard and soft palate is normal; but, I think, that, in the words of an aged and eminent statesman, this is rather a "nebulous hypothesis."

And now what are the reasons that induce us to proceed to remedy this misfortune?

(1.) Certainly, in the first place, comes malnutrition. In severe cases of cleft, not only is the suction of the child seriously impaired, but what liquids are swallowed, will, in extreme infancy, until abnormal adaptation of the muscles concerned is mastered, regurgitate through the nose. Spoon-feeding, with the head well thrown back, or specially contrived nipple shields and teats, must remedy this, but even with above, many infants undoubtedly die of sheer starvation.

(2.) Defective speech must rank as the next trouble to be overcome, open vowels can be pronounced but with the consonants our patients are less well able to grapple, seeing that for their correct pronunciation complete division between the mouth and nose must take place.

(3.) Among minor defects, unwarmed air passing too freely in, gives a constant tendency to nasal catarrh, while (4) air passing continuously over the tongue and fauces may produce excessive thirst (a misfortune affecting many others besides the sufferers from cleft) and (5) the sense of taste and smell is often quite defective.

Treatment.—"Excelsior" must always be the watchword of our profession and a healthy "progressivity" movement must be maintained as heretofore, but, as showing that our forerunners were by no means in the rear where investigation and research were proceeding, I must mention here, that the first successful case of staphyloraphy, or the stitching together of the edges of the soft palate, was performed by a dentist of Paris, called Lemoiner, and the first to attempt uranoplasty, or operation on the hard palate, was Mr. Avery of Charing Cross Hospital.

And now, before commencing to describe the operations, I intend to briefly allude to two important considerations, viz., (1) at what age should operative treatment be adopted? and (2) when should our advise be given for surgical, and when for mechanical treatment?

With regard to my first proposition the best period for operation has received consideration at the hands of our most advanced practitioners, extreme infancy, when life hangs by the merest thread, is, as is only to be expected, unfavourable, both for patient on account of shock and the delicacy of the tissues, and for operator, on account of the contracted conditions under which the work must be performed. Without arguing further, three years of age (although now I believe Mr. B. Sutton is content to operate at two-and-a-half years) is generally accepted as being most propitious, seeing that some control can be exercised over the patient, and the difficulties of phonation grappled with before much mischief has been done.

With my second point we are far more likely to be concerned and on this matter I wish to lay particular stress, for here it is that we, as dental surgeons, may be consulted and an opinion demanded from us.

Putting aside such special conditions as age, temperament, expediency, &c., each of which must be considered on its merits in the particular case in hand, a somewhat convenient generalisation may be effected, viz., (*a*) where the tissue presents in good quantity affording a good hold to any stitches that may be inserted, and permitting of edges readily pared and brought together, operation is doubtless to be advised, but if scanty and poor in appearance some other means of remedying the defect must be chosen.

Secondly, in operations about the hard palate, those that are high and vaulted will give far less trouble to the surgeon than those that appear low and spreading.

Nature herself often attempts, and sometimes succeeds in making a bold bid for giving relief, viz., by the growth of a kind of polypi or adenoid vegetations which mechanically blocking up the aperture enable the patient to talk and drink with but little inconvenience.

Before commencing any operation the surgeon must assure himself that the general health of the patient is all that can be desired, and also that the local conditions must present no obstacles to the ready attainment of healing by first intention, if nasal or pharyngeal catarrh is present, or the patient is suffering from enlarged tonsils or adenoid vegetations, the catarrh must be treated and the tonsils removed. A good light is indispensable and anæsthesia having been obtained, a gag, Mason's or Smith's for preference, is introduced and secured by the assistant whose duty it will also be to keep the mouth clear of blood.

Next with a sharp scalpel an incision parallel to the alveolar ridge and extending from the last molar to just behind the lateral incisor, right down to the bone should be made, avoiding if possible the palatine arteries, next the muco periosteal tissue should be rasped off the bone up to the cleft, through the newly made openings and with a pair of scissors the attachment of the tissues to the hamular process must be freely divided, this being a matter of great importance.

Now having seized the margin of the flap, with a keen knife the edges of each side are carefully pared from before backwards as little tissue as effectually performs this being removed. This accomplished satisfactorily, sutures of silver wire, silk or gut must be passed through each flap to hold them in position while union is secured, this is effected in various ways, that with which Mr. J. Smith's name is connected being perhaps most frequently adopted. With a hollow curved needle, with a small revolving screw at the base, round which the wire is rolled and which a turn of the thumb protrudes through the top, an entrance from below upwards in one side of the cleft is made, and then without withdrawal, the needle is passed through the other side from above, downwards, the wire protruded and each stitch tied as it is passed through.

Another way is by passing through the flaps corresponding loops of silk along the whole length of the cleft, and the substitution of the loops by silver wire, a more elaborate method perhaps, but still very useful.

Lastly, tension must be relieved by the division of some of the adjacent muscles, viz., lev. palati and tensor palati, and if necessary of the pal. gloss. and pal. pharyngeus. The lev. palati may be divided by prolongation of the lateral incision, or by the insertion of a curved knife from behind and severance of the muscle fibres in this way.

Careful nursing after operation is of great importance, soft foods only must be given, while talking and sucking of the palate strictly prohibited, a mild antiseptic mouth wash should be used, and if all goes well at the end of from a week to ten days the stitches in the soft palate may be removed, but those in the hard palate must remain some time longer.

Occasionally it happens that through insufficient paring of the edges, or a fold of mucous membrane getting tucked in, a troublesome fistula results, and this occurs the more frequently at the apex of the cleft, time may mend this, either wholly or in part, but as an adjuvant, caustic or fuming nitric acid may be employed. Another complication is that secondary hæmorrhage, here the cause, generally a half divided artery, must be found and tied, but plugging and styptics must especially be avoided.

Osteoplasty, or division of the bones through lateral incisions and the prising of the halves together was formerly somewhat widely employed, but not proving very successful it has fallen into disuse, as also has the still earlier method of stitching the velum to the post pharyngial wall and thus entirely shutting off nose and mouth, the same may be said of methods in which plastic operations with tissue from the face have been attempted.

I do not intend here to discuss the question of the fitting in or the making of obdurators, one more able than myself having volunteered to do so later in the session, but I think just a few words will not be out of place. The idea of closing clefts in the palate with a mechanical appliance was in vogue amongst the Greeks, but more recently Dr. Norman Kingsley in his book quotes Ambrose Paré, a French surgeon in 1579, as suggesting "that the cleft should be covered by a silver or gold plate made like unto a dish in figure, and on the upper side, which shall be towards the brain, a little sponge must be fastened, which when it is moistened with the moisture distilling from the brain will become swollen and puffed, so that it will fill the concavity of the palate, that the artificial palate cannot fall down, but stand fast and firm as if it stood of itself."

Of the numerous varieties of obturator, nor of the methods employed in adapting, shall I enter into at any length, choice appears to lie now-a-days between that known as the Kingsley, where a soft velum replaces the lost tissue, and the Suerson or wholly hard rubber appliance, the idea being to keep the sides of the cleft in continuous approximation with a deep rubber box.

Let us now consider the question of Obturator v. Operation, so much has been done towards a successful issue of the treatment pursued surgically in recent years, that the objection of inadequate results in those cases selected as suitable by a competent surgeon, cannot apply with the same force as formerly.

On the other hand, the continual presence of a mechanical appliance in the mouth is a source of irritation and bother, not to mention (for hospital patients) the initial expense, again they cannot be fitted before from thirteen to fifteen, and by this age the habit of defective phonation is fully pronounced. Furthermore, if scrupulous cleanliness be not observed, caries of the teeth and fœtor of the breath occurs, while even ulceration of the sides of the cleft may be set up.

On the other hand, in otherwise successful operation cases, I believe it not uncommonly happens that from contraction of tissue the patient is unable to approximate the pharyngial wall to the velum, and hence the absolute separation of nasal and oral cavities is rendered impossible. Still from the weight of evidence in hand you will see that, wherever possible, an operation in infancy should should be performed, and not only in infancy but even in youth or early manhood, great benefit may result to the patient if willing to undergo the treatment.

After operation, if we are called upon to supply nature's want, careful instructions must be given our patient to use every effort to remedy the original defect in speech, and a new education so to speak, in this respect must be commenced a course of voice training or reading aloud with a friend will prove of service, as will frequent repetition of those sounds or syllables that are found difficult to overcome.

With regard to the after condition of the parts, some consider that in Uranoplasty new bone is deposited from the under surface of the periosteum ; this, however, appears not to be the case ; new bone is *not* found, but its place is taken with an equally efficient substitute, *viz.*, a dense fibro-cicatrical tissue.

Another complication, more especially where a severe hare-lip has been cured conjointly with the cleft, is that there appears a tendency of approximation in the alveolar borders, and thus the production of a V-shaped jaw.

And now a few words upon the condition of congenital deformity of the upper lip, called by a misnomer hare-lip, and so miscalled in the fact that the cleft in the lip of the animal from which it is named bifurcates above to reach each nostril. As in cleft palate, so every variety of severity is met with from a mere notch in the free border of the lip to a cleft implicating the alveolus and nostril, and if double entirely separating off the os incisiorun and its accompanying portion of lip.

Hare-lip is said to be more common in boys than in girls (a fortunate circumstance), if unilateral appears with greater frequency on the left than the right ; but with regard to the percentage of births in which the deformity occurs, reliable data cannot be obtained, and therefore the estimate of 1 in 1,800 infants presenting the combined deformity must not be taken as absolutely trustworthy.

From the nature of the circumstances, the objections to operation in extreme infancy will not have the same force when applied to hare-lip as when cleft palate is under consideration, and so if uncomplicated with excessive debility or severe clefts, as unfortunately so frequently occurs, there is no reason why treatment should not be adopted as soon as the operation can be borne, that is to say, from about six weeks to six months, scarring in these cases being almost obliterated ; in some, however, owing to the severity of the cleft, nutrition is impaired and a gradual starvation taking place, life is endangered. With such patients an earlier or even immediate operation must be undertaken.

In doing this, the first stage, and it is an extremely important one, is to thoroughly detach the lip from the bone, and this for the same purpose as the lateral incisions were made before, *viz.*, for the relief of tension ; in the performance of this the knife must be kept close to the bone, and if necessary carried well up towards the infra-orbital foramen.

Next comes the preparation of the edges, and when the paring is completed the two margins should not be parallel but present a concavity, so that when placed in apposition a prolabium is formed on the margin ; when contraction occurs, as it invariably does, this prolabium disappears and a normal lip is left, whereas if parallel edges are joined, a notch will result after complete healing. Free bleeding from the coronary arteries may result which clamps or pressure must be used to check.

Thirdly, we come to the method of union, and this is effected either by the introduction of pins and a figure of eight suture, or by the use of silver wire or catgut stitches alone, but if these are used great care must be taken that no portion of the mucous membrane be allowed to curl in or in any way come between the edges or non-union must result.

When the operation is complete, a collodion dressing should be applied, and this is carried out by Mr. Rose as follows : " A piece of antiseptic gauze folded double is cut butterfly fashion, so that one wing is fixed on each cheek, and the uniting portion, just the correct width, passes over the wound up to which collodion is carried close but not over, so that the wound is covered simply by a bridge of gauge.

Time will not permit of my treating of the numerous specialised operations for cleft lip, and for the same reason I cannot but just touch on those for double cleft.

In these unfortunate cases an element of difficulty is introduced in the shape of a protuberance of the os incisiorun. Two courses are open, firstly, to remove it altogether ; or secondly, in infancy to retain it and force it backwards either immediately or proceed more gradually by the use of continuous pressure in the shape of bandages.

I need hardly say that wherever possible the latter method should have the preference, but at the same time it must be borne in mind that the bone frequently remains mobile while the teeth often erupt obliquely and soon decay, but if removed the soft parts must be treated on a subsequent occasion, when the actual steps of the operation are similar to those performed for unilateral hare-lip, although modifications have been introduced by various surgeons to meet the special requirements of diversified cases.

Gentlemen, time is getting on, and having witnessed that restlessness that overtakes these meetings when the speaker exceeds the allotted time, or becomes somewhat long-winded or prosy, I will finally but say a few words on the rarer congenital malformations.

Facial clefts are a most serious class of deformities in which the facial structures are largely involved, but happily very few such cases are reported, and those that are have occurred mostly in foreign practice ; in one mentioned by Tillmans the cleft involved the lower lid and left eye, and was remarkable in the fact of development of accessory teeth along the margins of the cleft.

No special line of treatment can be laid down, in fact as a rule no treatment can be adopted, but where possible plastic operations must be attempted to minimise the deformity.

Mandibula clefts are rarer still, almost as much so, in fact, as median hare-lip, and in those few cases that have been pointed out, the deformity varies from a notch in the lower lip alone to implication of the tongue and complete severance of the jaw.

Macrostoma, or increased transverse diameter of the mouth, is another of the rarer congenital malformations. It is generally found associated with defective brain power, and also frequently with an abnormal condition of the external ear, which is either malformed or produces an accessory auricle. Mr. Sutton in the Trans. Odonto. Society reports a case in which a red scar connected the ends of a large cleft with a gaping wound over the temporal region, and through which the convolutions of the brain were visible. Treatment is generally out of the question.

I am afraid I have trespassed on your patience, but I hope that what I have touched upon, although only so lightly, has been not wanting in lucidity. Without a practical exhibition of these many operations, I think it is difficult to thoroughly understand the many intricate details necessary for success, and therefore every chance should be taken of acquiring such knowledge at the operating table. Finally, if I can have to-night put before you the advantages to be derived from surgical and mechanical treatment in these congenital clefts, as well as conditions under which the former or the latter should be adopted, I think your time will not have been wasted.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE MONTHLY MEETING was held on Monday, November 6th, at the Dental Hospital, Leicester Square. Mr. R. H. WOODHOUSE (one of the Vice-presidents) occupied the Chair in the absence of the President. The minutes of the previous meeting having been read and confirmed, the following newly elected members signed the application book :—Messrs. E. H. L. Briault, C. J. Tisdall, J. Northcroft, E. F. Smith, and H. J. Stevens.

The Chairman stated that Messrs. G. R. Schiach, of Elgin, and F. W. Richards, of Birmingham, had filled up their papers and been admitted to membership. Mr. C. F. Sutcliffe, of South Shields, was elected upon a ballot.

The Librarian (Mr. Ashley Gibbings) reported the presentation of a copy of the work "Diseases and Injuries of the Teeth," by Mr. Morton Smale and Mr. J. F. Colyer. They had also received "Anæthestics and their Administration," by Dr. Hewitt, and "Fistulas of Dental Origin," by M. Camille Tellier.

The Curator (Mr. Storer-Bennett) had nothing to report.

The Chairman said there were two or three very interesting communications to receive.

Mr. Stanley Boyd showed a woman, aged sixty-one, in whom he had resected the symphysis of the lower jaw and had succeeded in preserving the appearance of a chin by inserting a spanner of stout silver wire between the sawn ends of the bone. The case was, clinically, interesting for several reasons. In the first place, for fourteen years her tongue had been getting more and more covered with leucoplakial patches, although there was no cancerous heredity, no history of syphilis, no smoking, drinking of spirits, or other known cause of leucoplakia. Next, thirteen years ago, without obvious cause, all her teeth loosened and came out one after another. Thirdly, she had two, and probably three, distinct epitheliomata in her mouth, one on the right side of the dorsum of her tongue, due, undoubtedly, to invasion of the tongue substance by a leucoplakial patch ; another of the frœnum linguœ and floor of the mouth, involving the symphysis of the jaw and creeping on to the lower lip, seemed due to the irritation of a denture which she had worn for many years ; lastly, whilst in hospital, a small ulcer, having the characters of an epithelioma, appeared in the oral surface of the upper lip—unfortunately, the bit removed, was lost. The operation performed consisted in the removal of the symphysis, the floor of the mouth, the anterior half of the tongue, the submental gland, and the submaxillary lymphatic glands on both sides. The patient recovered well.

Mr. HUTCHINSON said that Mr. Boyd had demonstrated how very simple it was to put in the silver wire and how well it resigned itself to its present circumstances. They appeared to remain without causing irritation, and he could not see any reason why the vulcanite plate with two silver wires stuck out from the end should not be equally well buried in the projecting ends of the bone.

Mr. BOYD : "Subsequently."

Mr. PATERSON asked Mr. Boyd to tell them the result of the case he brought before the Society last year. Then he thought he used a different form of spanner.

Mr. BOYD : "No, a knitting needle."

Mr. PATERSON desired to know the result. He had seen two cases treated without any spanner at all, but of course the result was a deplorable one. With regard to the patient in the next room, had Mr. Boyd noticed that there was a suspicion of crepitus on both sides of the jaw. It occurred to him there was possibly some necrosis at the end of the spanner.

Mr. BOYD said with regard to the case he mentioned last year, the girl, unfortunately, got a recurrence of the sarcoma for which the operation was performed. Previous to that he had endeavoured to take out the needle. He had not put it in with the intention of leaving it there. The girl always had pain, so he endeavoured to take it out. He could not find it, probably because he loosened it from the jaw. The girl, however, thought he had taken it out and was quite happy, afterwards, when the recurrence came, he cut that out plus the needle. In reference to the present case he did not think there was any necrosis, and he certainly hoped there was none.

Mr. ARBUTHNOT LANE brought forward a case of "Anklylosis of the left temporo-maxillary articulation with dwarfing of the lower jaw." The patient, a child of about twelve or fourteen years of age, was in attendance, and models of her mouth were shown. When she was two years old she got a sting on the left cheek, diffuse cellulitis followed, and from that time she had been unable to move the jaw. The lower jaw was extremely wasted, or rather undeveloped, and the lower incisors were almost in contact with the mucous membrane of the palate There was not the slightest movement in the joints. He cut away the left condyle, and after the operation there was a certain amount of movement, which is gradually increasing. During the administration of the anæsthetic she stopped breathing, and being unable to get at the tongue to bring it forward, he had to perform a hasty tracheotomy. The patient was first seen at the Evelina Hospital, and afterwards she was admitted into Guy's Hospital under his care. He saw Mr. Maggs who gave him his advice. Two things occurred to him (Mr. Lane) to do. One was to cut vertically through the jaw on the distal side of the canine teeth, bring forward the fragment, and fix it. The other, was to take away a piece of the ramus on both sides. He would be glad with suggestions from members as to the future treatment of the case.

Mr. W. A. Maggs said he had seen the patient both before the operation and since. As had been stated, there had been absolute fixation of the jaw from the age of two years. The way in which the girl fed herself was by passing food between the incisors of the lower jaw and the mucous membrane of her palate, between which there was a slight interspace. The feeble development of the lower jaw gave the patient the appearance of want of mental development, but that was not so, as she had passed the usual standard of examination for her age. One of the causes of anterior protrusion of the upper incisors is excessive development of bone in the premaxillary region. In this case it is due to non-development of the lower jaw ; and the flattening of the lower incisors is probably due to the way in which she took her food, and also to muscular action. With regard to the teeth, it is interesting to know their condition, seeing that they have never been subject to use, or properly cleaned. Several of the teeth are carious interstitially, notably the upper incisors and one of the lower. The first permanent lower molars are decayed to the level of the gum, so that when the jaw was fixed it was impossible to say that they had been erupted. All the permanent teeth are *in situ*, excepting the left upper canine, and all the second and third molars. The result of the operation was, to his mind, very satisfactory, and he hoped that more space between the teeth would be gained in the course of time. The only treatment he would suggest was pulling inwards the upper front teeth, and pushing out the lower, as is done in regulation cases, which would effect the same purpose as suggested by Mr. Lane, excepting, of course, at a much slower rate. It would be very desirable to follow up the case, and also to know from Mr.

Lane whether he thought the lower jaw would become more developed with use, or whether it had attained its full development, even though a more free movement of the jaw took place.

The SECRETARY (Mr. Robbins) read a communication from the President describing a new form of Rubber Dam Holder.

Mr. H. HOPEWELL SMITH read a paper entitled

"SOME OBSERVATIONS ON THE CELLULAR ELEMENTS OF THE DENTAL PULP."

Mr. SMITH said it was his desire to bring before the meeting the result of several years' work in investigating and studying the morphology and physiological properties of the Cellular Elements of the Dental Pulp. His statements he trusted would be more argumentative than dictatorial, more suggestive than dogmatic. Of all the structures noticed on the microscopic examination of the tooth, the greatest interest centred in the pulp, for it contained elements which differed markedly from any other in dentine, enamel, ceosmentum, or periteum. Each mite of fresh information made up a larger knowledge and contributed to a complete science. Cursory examination showed that two kinds of cells stood out clearly distinct from each other, the peripheral prominent layer of cells, the so-called odontoblasts, and the central smaller less defined pulp cells.

THE CELLS OF THE MEMBRANA EBORIS.

Their Histology.

All along the periphery of a section of the pulp, arranged like a palisade in a single row, was a layer of large, columnar, epitheloid cells. That layer was most marked at the coronal portion of the pulp, because appreciably less distinct at the cervical portion, while in the region of the root it was practicably invisible. The Membrana Eboris was composed of cells, the so-called odontoblasts. An odontoblast generally speaking was a large multipolar, nucleated, epitheloid cell, more or less columnar in shape. It varied considerably in the same specimen, and ranged from that of a thin cord with bulbar terminations, to that of a pear or banana. Many cells were carrot shaped, many caudate. They varied also in other respects. Cells in the same section differed much in conformation. Where the pulp was constructed or flattened laterally, there the odontoblasts were thick and short; in the place where the pulp was broadest, however, they were long and thin. In teeth having cylindrical pulp cavities, the diversity in shape of the cells was hardly appreciable. Pathological conditions, such as inflammation of the pulp, abscess and calcific degenerations did not seem to affect the shape of the odontoblasts at first. With regard to size, odontoblasts varied very considerably, the coronal cells being larger and more marked than the radical cells of the pulp. The change in size corresponded to the length and width of the tubules, with which they were closely associated.

RELATIONSHIPS TO SURROUNDING STRUCTURES.

He had, in a paper written in 1889, shown that the cells were not packed closely together, but were separated by wide visible spaces, which were, in certain cases filled with a homogeneous substance, and small, round, and angular cells. That was the case in developmental pulps, there being an absence of inter-cellular tissue in most adult specimens; and there were visible in many instances, fine delicate fibrils stretching into the dentine between the odontoblasts, in addition to the already mentioned structures. So far as his observation went those fibres were not nerves, but form what might be termed the "supporting fibres" of the pulp. The long uses of the odontoblasts were approximately in the same direction as that of the tubules. In structure they possessed a fine degree of granularity, which did not disappear on the addition of a weak acid, and was unaffected by glycerine and certain other chemical agents. Their nuclei were large and prominent. It was believed that there was no limiting membrane. The cells were remarkable for their polar off-shoots, which may be classified as central or basal, peripheral or dentinal, and medium or inter-cellular. The first-named were most easily observed in sections prepared by Weil's or decalcifying processes, but the latter required, as Mr. Mummery had suggested, a special method of staining with iron and tannic acid. There was a marked analogy existing between the odontoblasts and certain epitheloid cells found in the olfactory region of man and animals, in the ganglionic layer of the retina, and the auditory cells of the macula lutea of the membranous labyrinth. Their processes were similar, their structure identical, their shape only modified by the mutual opposition of neighbouring cells.

THEIR PHYSIOLOGY.

The questions relative to the functions and uses of the odontoblasts were deep and intricate. Their small size, delicate nature, and inaccessibility had rendered microscopic investigations difficult, and many theories as to their properties had been presented. Various opinions had been entertained by Mr. Tomes, Magitot, Kölliker, Klein, Heitzman, and Bödecker. The axiom that dentinal fibrils were sensation conductors was well-known to all. Inasmuch then as they were regarded functionally in the light of nerves, and as they represent the peripheral poles of the odontoblasts, and were in fact part of those cells, it followed that the latter must be concerned in the act of conveying extrinsic stimuli to the nerves of the pulp. An odontoblast was more of the sensation transmitter than a sensation generator. It was believed to be a means of communication between fibril and nerve endings, passing on sensory impulses and warning the pulp of incoming dangers. To prove that it was necessary to show that odontoblasts did not form dentine, and that they were the end organs of the nerve filaments of the pulp.

NEGATIVE EVIDENCES.

The arguments to disprove the dentine, forming theory were many and powerful. They were as follows: No observer had ever seen a semi-calcified odontoblast, or recorded the observation of one secreting a calcareous material. The same cell could not take on two totally different functions simultaneously. There must be a separate cell for the formation of fibril and matrix. The presence of spaces between odontoblasts would lead one to expect to find like spaces in dentine, but that was not so. As fibrils and their sheaths were known to cross interglobular spaces, and as the latter are considered to be an arrest of dentinal development, one would expect that if the fibrils were formed by the same agents as those which produced matrix, they themselves (fibrils) would be absent, and that was not so. Again in the semi-calcified matrix observed in developmental pulps, fibrils were seen most clearly to stretch across the intervening zone, and there was a distinct mark of demarcation between them, and the homogeneous substance through which they extended. The granularity of the cells was unaffected by dilute acids or chemical reagents; thus it would seem that calcium salts entered but little into their composition. After decalcification in formic acid, the matrix might be torn into laminæ, which ran parallel to the surface of the pulp cavity, whereas they would run at right angles to the surface if odontoblasts formed matrix. The dissimilarity in the shapes and sizes of the cells was against the acceptance of that view; that dissimilarity would be inexplicable if they formed dentine. The fact that secondary dentine nodules in the pulp were formed by small round cells and that odontoblasts took no part in that work, was clearly seen when sections of pulp containing calcareous degeneration were cut *in situ*. After a cell had ceased its functions, it atrophied and disappeared. Odontoblasts, however, persisted long after all dentine matrix had been completed. In some sections of the root, with pulp *in situ* here and there odontoblasts were absent. It was remarkable that in those situations their corresponding tubules were wanting. Finally, there was to be added Mr. Underwood's statements that the distinction between fibril and matrix was not only one of a degree of calcification.

POSITIVE EVIDENCES.

Odontoblasts, as far as was known, were derived from the stomodœal mesoblast, *i.e.*, they were formed on the edge of the up-growing papilla of the dentine organ. If it could be proved that they arose from epiblast, one great difficulty would be removed, for it would be quite easy to affirm that they were nerve endings or end bulbs, and their analogy to the cells at the terminations of the optic and auditory nerves would be more striking, not only with regard to their morphology, but also their physiology. Most authorities agreed that the nervous system was produced primarily by the epiblastic layer of the blastoderm. Accepting those statements the conclusion was that odontoblasts could not be from a developmental point of view, ganglion cells in which sensory or tactile on trophic impulses arose *de novo*. But it was no argument against the idea that they served as sensation transmitters. It was a difficult matter to believe that odontoblasts served merely as factors in the production and keeping up the nutrition and vitality of dentine. There were a number of reasons for supposing that the odontoblasts were more intimately connected with the nervous system than had hitherto been supposed, and they must be the actual end organs or dental ganglia of the nerves of the pulp. The corollary was that the term odontoblast was a misnomer.

The Cells of the Pulp Proper.

The central cells of the pulp varied in size and shape during the various stages of the growth of the pulp. In developing teeth they were large cells, having rounded, angular or spindle-shaped outlines. In short, they partook of the nature of embryonic cells generally. There nuclei were large, prominent and granular, and contained no nucleoli. Near the superficial portion of the tooth they were very loosely held in the meshes of the fine connective stroma, and there were more spindle cells to be seen. In adult teeth the pulp cells were chiefly stellate or angular in shape, but cells of any description were comparatively few. A few insignificant looking odontoblasts were firm, but the mass of the pulp seemed composed of bundles of thick and thin connective tissue fibres, separated at the periphery by large vacuoles. If transverse section through cervical and radical parts of the pulp were examined, a great difference of structure would be noticed, with regard to the fine connective tissue fibres the spoken of, it was probable they served not only a stroma in which cells were imbedded, but as a supporting framework to sling up the soft delicate pulp. The functions of the spindle cells was probably a generative one, to produce new odontoblasts in places were the old cells had been modified by the advancing line of freshly deposited dentine.

In conclusion, Mr. Smith thanked his audience for the kind attention they had given to his communication. The subject, he said, was very technical, but he trusted that it had been made an interesting one.

Mr. Hopewell Smith then gave a number of illustrations obtained from photographs. They were shown upon the screen and were, most of them, particularly good examples of those which the lecturer desired to call attention to. The Chairman said as much, and invited discussion.

The Discussion.

Mr. F. J. Bennett said he sometimes felt that they would all have to learn their work over again. Still they must not regret that they were always being brought face to face with new ideas as it was what would continue to happen as long as there was anything left to be discovered. They must try and keep open minds for new ideas. He understood that the specimens they had seen had been prepared by the Weil method.

Mr. SMITH.—All those I have shown to-night were done by my own method.

MR. BURNETT would have been glad to hear a more detailed description of the manner, as he thought a great deal depended on the way in which specimens were prepared. The diagrams and also specimens in the adjoining room indicated something more than the natural structures of the pulp. There was an amount of shrinking. They seemed to show not the actual condition that existed in the pulps, but the effects of chemical treatment upon them. He disagreed with the statement that there was no alteration in the structural cells on the addition of chemical agents. There was evidence to the contrary. With regard to the question of the possibility of a bi-functional activity in the same cell, it might be true there was not more than one activity in the cell, but there was more than one condition. They found the cells not only performed their function, but in the process of age and degeneration they altered their nature. A change was brought about by the gradual encroachment of calcification proceeding from the originally circular odontoclass cells inwards. The best specimens of fibrils entering the dentine had been shown that night, but the theories advanced were still in doubt.

Mr. W. A. MAGGS had not heard Mr. Smith allude to Sudduth's theory. It is that odontoblasts preside over the calcification of dentine, but that they are not themselves converted into dentine. Calcific matter is deposited round the dentinal fibrils, and as it is deposited so the odontoblasts retreat. In fact, that dentine is a secrection from the odontoblast cells, and being formed around the dentinal processes it is tubular, and that by the fusion of the tubes the matrix is formed. Mr. Smith had said that the cells after having served their purpose degenerated, he (the speaker) wished to know when that took place? He had always been under the impression that so long as secondary dentine is formed the odontoblasts are present. Calcareous deposits in the pulp where there were no odontoblasts had been spoken of. He (Mr. Maggs) had been unable to tell from the specimens shown on the screen whether it was really dentine, or simply a deposit of lime salts in the pulp. He thought the distinction between true dentine, containing tubules, and an irregular calcification, was very important.

Mr. HOPEWELL SMITH replying, stated that he had used his own process. He was not very good at Weil's method, and he had written to Mr. Mummery asking him to lend him some specimens, but unfortunately the gentleman was ill. The process he (Mr. Smith) adopted was, he thought, scientific. He hardened the soft part first and softened the hard part afterwards. There was no doubt that *post mortem* changes did take place almost directly after the tooth had been extracted. He had used glycerine and weak acids and had not found any marked alteration in the structure of the cells. Of course, the diagrams were very semi-diagramic, he had explained in an exaggerated form what appeared under the microscope He believed odondoblasts disappeared in old teeth. Although in some cases they were long and in others thin, he could not really make up his mind that they entered the tubules themselves.

A vote of thanks was accorded to Mr. Hopewell-Smith for his paper, and to those who had brought forward communications.

The Chairman announced that the next meeting would be on December the 4th. when a paper would be read by Mr. J.W. Pickering on "The Physiology of the Heart in Relation to Anæsthetics."

The proceedings then terminated.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

ORDINARY GENERAL MEETING, held Monday, November 13th. The President, W. H. WOODRUFF, Esq., in the Chair ; the minutes of the previous meeting were read and confirmed.

The following members then signed the obligation book and were admitted members by the President, Messrs. W. Green, A. H. Elkin, W. Marston, and A. Surton.

On Casual Communications being called for, Mr. D. P. Gabell described two patients, who were present, and gave the photograph of one to the Society. One was a case of epithelioma of the tongue in a man aged sixty-seven, who came to the hospital to have some stumps removed, which had caused a dental ulcer, which had become epithelimatous ; the patient has been a teetotaler for twenty years, and smokes an ounce of "shag" a day, and had syphilis forty years ago. When seen, the tongue was much indurated and speech was thick ; there was salivation, and the submaxillary glands and glandulæ concatinatæs were very much enlarged right up to the base of the skull, especially on the left side. Mr. Waterhouse decided that operation was both dangerous and useless under the circumstances.

The second case was a girl of seventeen years, who came to the hospital to have some painful stumps extracted; she presents a peculiar appearance, the chin having fallen over to the left side almost an inch, and the mouth lies in an oblique direction, also on the left cheek is a nodular flap of skin, freely moveable with the cheek, and behind this is felt a small hard circumscribed mass about the size of a large pea. The teeth on the left side in both jaws are worn down to the gums, those on the right side are not so bad. The jaw on the right side is normal; on the left, the horizontal ramus is short, and terminates in a small conical tubercle, the base of which forms a muscular attachment. There is no ascending ramus. The tip of the cone is situated about half-an-inch below and one inch in front of the lobe of the ear, and is moved up and down during mastication. The patient has also a cleft palate, extending through the soft, and just into the hard palate. This was operated on at St. Bartholomew's fourteen and a-half years ago without success, and again ten years ago, with only partial success. All these deformities are congenital, and the patient is otherwise healthy and well built. Up till she was six years old she was deaf on the left side and clumsy with her hands, but is now able to hear well and works as a milliner. She is the oldest of five children, all the rest of whom are normally developed. The mother thinks the deformity due to a fright during pregnancy.

The PRESIDENT then called on Mr. L. S. Austen for his paper on "Congenital Clefts about the Mouth." See page 538.

Mr. NICOL, in opening the discussion, congratulated Mr. Austen on his paper, and said, that cleft palate was not due to a mishap to the mother during pregnancy, as the history usually dated the mishap a long time after the arches of the palate have normally united; also, he remarked, that Mr. Austen had not mentioned the very early development of the teeth on the premaxilla in cases of double cleft.

Mr. MAY thanked Mr. Austen for the instruction contained in his paper, but was sorry he had not gone more fully into the treatment of the more complicated cases of hare-lip; he also spoke of a case of the congenital absence of the anteria one-third of the tongue in three sisters.

Mr. EVANS wished to know the difference between the use of clamps and pressure to prevent bleeding in hare-lip operations; he thought they were identical.

Mr. D. P. Gabell asked why Mr. Austen would not use styptics to prevent hæmorrhage after cleft palate operations; and said, he had seen a case of union of the soft palate to the posterior wall of the pharynx, completely shutting off the nose from the mouth, except for a small hole close up to the hard palate, through which air could be drawn in inspiration only. He complained very much of sore throat, from dust, &c., entering while breathing through his mouth, but refused to be operated on. Mr. Gabell thought that the posterior wall of the pharynx moved more in cases of cleft palate, and not less. There had also been a case in the hospital recently, in which the cleft extended right through the jaw and lip. The bones had fallen together, producing an ugly V-shaped arch, but with a little pressure might be pushed slightly apart. He also suggested that operations for hare-lip should be done in the third month, before teething commenced.

Mr. Dodd, in answer to an appeal from the chair, said he thought a man should never make a speech if he had nothing to say, or did not throughly understand his subject, hence his shyness. He asked Mr. Gabell if the case he had mentioned was a congenital one (yes), and explained to Mr. Evans the difference indicated by "clamps" and "pressure."

The President said that he was sorry to hear so little discussion on such a subject. He had taken great interest in the subject, and advised as early an operation as possible in cleft palate cases, two-and-a-half years was not usually too soon, both for the comfort of the child and before speaking was learnt; and in extensive cleft he deemed it advisable to operate on small portions at a time, and not all at once. Mr. Austen had not mentioned in his paper concerning hare-lip the liability of the ala of the nose to be displaced, and the possibility of rectifying this by the use of ivory plugs worn at night. Mr. Austen said that from six weeks to six months was the usual time to operate for hare-lip, but Mr. Bland-Sutton sometimes operated at three days old. There was a great tendency for mothers to neglect a deformed and weakly child, and not to nourish it properly, but if it was operated on very early it was able to take the breast and thus obtain good nourishment, and was therefore more cared for by the mother. As regards the use of pins or sutures, he much preferred sutures, as not being liable to be torn out by the child, and as being better and leaving less scar. He thanked Mr. Austen for his very intelligent paper.

In reply to Mr. May, Mr. Austen stated that he pointedly avoided going into the details of the numerous specialised operations for hare-lip, being afraid that, in treating of a subject, almost entirely theoretical for most of those present, the multiplicity of detail would only confuse and render obscure, what he had tried to keep particularly clear, viz., the fundamental steps of the operation, and that, therefore, he had passed over a great deal of what was, no doubt, most interesting and instructive, but, at the same time, rather complex without practical demonstration. He considered the case mentioned, viz., loss of the anterior portion of the tongue most interesting, as was also the premature eruption of incisors described by Mr. Nicol. Mr. Gabell, he was afraid, had misunderstood him, as he did not say that the posterior wall of the pharynx was paralysed. The period for operation stated was from the sixth week to the sixth month, but the exact time should be kept as near as possible to the former rather than the latter date. In connection with the very early operations mentioned by the President, it seemed they had been tried by some Continental surgeons, but the results had not quite justified their general application, owing to the somewhat large percentage of deaths recorded after such treatment. Finally, Mr. Austen begged to thank the President and those gentlemen who had so kindly criticized his work that evening. He was afraid he had not treated the subject in as lucid a manner as he ought to have done, but he hoped his hearers would remember that it was an exceedingly difficult one to discuss owing to the comparatively sparse number of these cases visiting the hospital, and the consequent lack of experience obtained in them. He begged to remind the students that some knowledge of these deformities was required by the Examining Boards, and keeping this in view, he had endeavoured so to model his paper that they might, obtain from it at least the groundwork of an understanding on the subject, and therefore he hoped they would forgive any imperfections and omissions, and take the will for the deed.

A vote of thanks was then proposed to Mr. Austen for his paper and Mr. Gabell for his Casual Communications.

The President then announced that the next meeting would be held on December 11th, when Mr. Freeman would read a paper on "Obturators."

The proceedings then terminated.

THE DENTAL RECORD, LONDON: DEC. 1, 1893.

POINTS OF DISCUSSION.

HAVING made the index and printed the title-page, we lay back in our chair and mediate on our contents. Imperfect, perhaps, yet we endeavour to be a "Record" of the Past, a mirror of the Present, an index for the Future. Convenience dictates periods, groups, volumes, and what can better serve these purposes than a time limit accepted by all—a year. Of this we have reached the end, and in our last number we confess a weak feeling towards looking over our previous numbers, to summing up results, to noting our shortcomings, to making good resolutions for the coming months. The past has been an eventful year, and though the very sunshine will make it memorable to those, who strive to see in dark cities, it is more with the inner life of the Profession that we are now concerned. Perhaps not the least important memory we recall is the discussion which has arisen concerning the action of the governing body of the British Dental Association. This important body is, from the very nature of things, called on to pass opinions and take action on various matters, they are elected, they volunteer for this purpose, and it is the privilege, nay, it is the duty of those who elect them to note and criticise their actions. To treat these with silence, so frequently begotten of contempt, would be but the poorest of rewards. Three points occur to us concerning which we have heard much--first, the action of this body *re* the Columbian Dental Congress; second, the removal of American diplomas from from the list of those registerable here; and third, the action or want of action *re* advertising. Concerning the first, our pages have certainly presented both sides of the question, and it is with considerable pleasure we notice that the unfortunate accidents, to put it mildly, which led to the matter being somewhat imperfectly presented to the meeting at Birmingham, have been understood by our American friends, and the threatened friction consequently considerably allayed. We are not prepared to assert that this official bungling had any effect on the verdict of the meeting, the inutility of sending official delegates to a congress, not called upon to decide a specific question, must be obvious, but we would that a courteous invitation had been more, shall we say, diplomatically? refused. The second point is one which has already met with our hearty acquiescence, but it has been urged that this matter was taken in hand by the Medical Council on the representation of but a very limited number of dental practitioners. Such an objection can not, of course, affect the right or the wrong of the immediate question, but it certainly does word a somewhat widely-felt idea that the majority are not sufficiently informed of contemplated action by the central body. This is closely associated with the presentation of an unofficial petition to the Medical Council asking for action against advertising. This, it seems to us, can be read in no other light than one of discontent with the Representative Board. But surely this is beginning at the wrong end of the story. Grant, for the sake of argument, that this Board is wrong, would it not be better to change its constitution rather than to take independent action? Into the merits of the question we have no desire now to enter, but would merely point out that a divided front can do us, as a profession, no good, and that the energy spent in getting up rival schemes would be far better employed in bringing the Board into harmony with the ideas promulgated. Such an agitation could not but be productive of good. It would arouse a more personal interest in the question and in the general well-being, and give us some idea as to the feelings of the majority.

THE Annual Dinner of the Past and Present Students of the National Dental Hospital, will be held on December 8th, at the Holborn Restaurant, Professor Michael Foster, F.R.S., etc., in the Chair.

News and Notes.

The Session 1893-4, of the Edinburgh Dental Hospital and School, was opened last month. There were 14 new entrants as against 10 last October. The total number on the roll is at present 35. It is expected that the new premises will be ready before next Session.

We are glad to learn that a Students' Society has been formed in connection with the Glasgow Dental Hospital. On Wednesday, November 22nd, Mr. W. Bruce Hepburn read the first paper. It was on "Crown Work."

On the 22nd ult., at the Manchester County Court, John Rogers, a waiter, of Prince's Street, Ardwick, sued the defendant, who is a dentist practising in Piccadilly, in this city, to recover £10 damages for personal injuries which the plaintiff alleged he had suffered by reason of the negligence of Mr. Macdonald's servant. The evidence showed that the plaintiff attended at Mr. Macdonald's rooms to have a tooth stopped and the nerve of it destroyed. Preliminary to the operation a carbolic dressing was put into the cavity by an assistant named Dewhurst. Some of the carbolic acid came from the wad which had been steeped in a solution of the acid, and in consequence the plaintiff's lips were blistered and the lower part of his face was burned over an area the size of a florin. For the defence it was submitted that the injury was not necessarily caused by negligence, but was rather the result of an accident, which might occur to the most skilful dentist when putting in a dressing of the kind. Even if the defendant was liable the claim was preposterous. The defendant, without admitting liability, had paid two guineas into court, and that sum, Mr. Sutton held, was sufficient to refund the plaintiff for any loss he had sustained. Various witnesses were heard, some of whom swore that burning a patient was not an infrequent occurrence in dental operations, but that carbolic acid burning was generally confined to the mouth, and simply raised painless blisters there. His honour gave judgment for the plaintiff for £3 3s. (including the money paid into court), and the costs.

On the 10th ult., in the Queen's Bench Division, Mr. George William Stringfield, a surgeon dentist of Lowestoft, brought his action against the Great Eastern Railway Company to recover damages for personal injuries sustained by him in a collision, which occurred on Christmas Eve, 1891, at Barnby, between Beccles and Lowestoft, in which three people were killed and several injured. The liability of the company was not denied, and therefore the only question was as to the damages. According to the plaintiff's case he had sustained such injuries as confined him to his room for five months; he was still unable to work, and was advised by his medical advisers that he would not be able to work for six or twelve months. His salary as assistant to his father was £250 a year, and he had hopes of being taken into partnership. The expenses for his illness amounted to £500. For the defence it was submitted that there was no evidence that the partnership, if ever contemplated, had been abandoned; that there was no strict proof of the salary; and that the amount charged for extras and change of air was excessive. The defendants called medical evidence to prove that in about six months the plaintiff would be sufficiently restored to health to resume his duties. The jury returned a verdict for the plaintiff with £2400 damages. Judgment accordingly.

On October 2nd, in Glasgow Sheriff Court, judgment was delivered in the case, Ezekiel Agnew, dentist's assistant, 2 St. Peter's Place, Edinburgh, against James Agnew, dentist, 9, Blythswood Square, Glasgow, for delivery of a certificate that pursuer had served three years as a pupil in mechanical dentistry, also for £1,000 damages in respect of defender's refusal to grant him a certificate. His Lordship says that pursuer was for three years in the employment of his cousin, the defender, on the footing of a pupil, during which time he attended the necessary classes. Towards the end of the time disagreements arose, defender maintaining that the pursuer devoted too much of his time to his classes and to other objects of his own, neglecting the work of mechanical dentistry, and at the end of the time the defender refused to give a certificate at all. Pursuer had since then been in the employment of an Edinburgh dentist of good repute at a good wage, and had shown a good general knowledge of the business. In the course of this action the defender granted a certificate to the effect that during the three years pursuer worked to him to the extent of what might be fairly put at one and a-half years. The evidence showed that this estimate should have been at least two if not two and a-half years. By defender's failure to grant the necessary certificate, the pursuer had suffered damages to the extent of £25, and his Lordship gives decree in his favour for that sum, with expenses. The delivery of the certificate must be held to be delivery *pro tanto* in terms of the demand made in the prayer of the petition.

THE *Cosmos* reports a curious judgment which has been given at St. Paul, Minn. In the case of Charles A. Vanduce *v.* William J. Woolsey, it has been claimed that the sheriff could take possession of the plate to which false teeth were attached and dispose of the whole at public auction. But Judge Kelly has decided that a dentist has no lien on a set of teeth on a plate after they have been attached to the patient's mouth, as so long as the teeth are in the defendant's mouth they are part of his body and cannot be seized as chattels. The case has been before the courts for some time, and attracted widespread attention.

A DENTIST at Breslau has been awarded three days' imprisonment under the following circumstances. Back in July, he undertook to make a small denture for seven marks, three were paid at the time, and the remaining four were to be paid when the denture was inserted. On August 2nd the patient returned, informed the dentist that she had found an old piece, which she had lost, and refused to have her new denture. Having regard to the easy manner in which he had treated her, he refused to entertain her proposals and after locking her in his room he endeavoured to find a policeman, and failing this, he threatened to retain her in custody till she paid. Finally she left her earrings as security, and brought an action for detaining her against her will, with the above result.

Loss of teeth as incentive to theft may strike one as strange, yet such it proved to be to a peasant living at Herbstein, a Thüringan village. Smoking, whilst he worked, he held the pipe between his teeth, but, alas! when these latter disappeared, this feat was no longer possible. At first he endeavoured to make this possible by winding thread around the mouth-piece, but, finding this arrangement imperfect, he sought another, and, in an evil moment, his eyes lighted on the rubber bands round the stopper of a patent beer bottle at an inn which he was in the habit of frequenting. So well did this answer, that he hastened to impart the information to toothless neighbours in distress, with the result that there was a run on patent-bottled beer and a corresponding disappearance of rubber rings, much to the astonishment and concern of mine host, until an accident led to the discovery of the above facts.

CONSIDERABLE attention has been directed, in the pages of the *Zahntechnische Reform*, to the evils arising from the use of the baser metals in artificial dentures. It is pointed out that the action of the acids of the mouth on copper would readily produce poisonous salts, and that the comparative rarity of symptoms may be due to the salts being neutralised and rendered inocuous by the various alkaline food-stuffs, *i.e.*, milk, white of egg, &c. With regard to the brown discoloration which covers a gold plate alloyed with copper, the opinion is expressed that this is copper sulphide (Cu. S.) formed from the sulphuretted hydrogen and sulphide of ammonium present in the mouth. Cu. S. being insoluble, is tasteless and harmless.

WITH regard to aluminium, though no salts are formed which are poisonous, yet it is stated it is readily acted on by most acids and by weak alkalies, and so is soon destroyed. Dr. Telschow forces aluminium into moulds, using hydraulic pressure, and states he has good results—concerning which the *Berliner Tageblatt* is led to express the hope that wearers of such dentures will be "right acid," for in alkaline fluids aluminium will follow its natural laws, and be dissolved in spite of Telschow and his great pressure.

THE following proposals are before the Hungarian Minister for the Interior with reference to the dental section of a new law regulating medical fees :—1. That the here-mentioned clauses have reference only to the capital and "Residens-stadt," and that in provincial towns the fees be 25 per cent. less. 2. Examination with mirror and probe and consultation at the house of surgeon, 2 to 5 fl. 3. Tooth or root extraction at the house of surgeon, 2 to 5 fl.

4. Ditto, with local anæsthetic, 4 to 10 fl. 5. The above services at the residence of patient to be reckoned double. 6. If more teeth or removing and replacing them the teeth are more or less disturbed roots be extracted at the same visit, for each following root or tooth, 1 to 2 fl. 7. Crown fillings with plastics, 3 to 10 fl. 8. With linings or pulp cappings, crown fillings, 4 to 10 fl. 9. Filling with pulpitis with crown plastic filling material, 8 to 20 fl. 10. Filling with gangrene of pulp with plastic crown filling material, 10 to 25 fl. 11. Filling with periodontitis, alveolar-periostitis, or with chronic alveolar abscess with plastic crown filling material, 15 to 35 fl. 12. If in cases, 7 to 11, gold be used as the crown filling material, for each filling add 5 to 20 fl. 13. Each separate operation for fileing teeth or cutting off teeth or roots, 2 to 5 fl. 14. Scaling, 3 to 10 fl. 15. Treatment of pyorrhea alveolaris (each visit), 1 to 3 fl. 16. For a tampon for hæmorrhage, 3 to 5 fl. 17. For making a vulcanite denture, one tooth, 5 to 10 fl., each additional tooth, 2 to 5 fl. 18. For making a gold denture, one tooth, 10 to 50 fl., each additional tooth, 5 to 10 fl. 19. For making a whole upper or lower vulcanite denture, 50 to 80 fl. 20. For making a complete denture in vulcanite, 100 to 200 fl. 21. For making one pivot tooth, 10 to 15 fl. 22. For making one pivot tooth, with previous root treatment, 15 to 30 fl. 23. Repairing a vulcanite denture, 3 to 5 fl. 24. Repairing a gold denture, 5 to 10 fl. 25. Treatment of irregularities, per visit, 1 to 3 fl. 26. Regulating plate, 25 to 80 fl. 27. Treatment of a surgical disease of the jaws through a supporting or replacing mechanism, 50 to 200 fl. 28. Crown and bridgework, per crown, 30 to 50 fl.

Journalistic Selections and Abstracts.

REGULATION PLATES.

By Dr. Gyilford.

In the earlier days force was principally derived from the elasticity of metals in the form of bars and springs, sometimes assisted incidentally with ligatures and wooden edges, but after the introduction of caoutchouc, rings cut from rubber tubing and

and this hinders their growing firm in their new positions. Retaining vulcanite plates were added to our list of materials available for exerting power. The latter on account of their great adaptability and ease of construction, for many years largely superseded the use of metals, but the tendency now-a-days seems to be to return to the use of metallic appliances, not only on account of their greater power, but because of their directness of action and occupancy of less space of the mouth. In their construction the more expensive metals, such as gold, platinum, and their combinations, were formerly used, but with the advent of steel in the form of piano wire and the introduction of German silver, it was found that equally efficient appliances could be constructed and at less cost. For this reason they have come into very general use. The chief objection to their employment is their oxidability, which soon renders them unsightly and seriously interferes with the movement of parts, such as nuts upon bolts and rods in tubes. To avoid this I was led to use platinized silver, which does not tarnish like German silver, and which, unlike steel, can be joined with hard solder without injuring its properties.

It is an alloy composed of one part of platinum to two of silver, and was introduced from England, where for many years it has been used in the form of wire posts for the support of tube-teeth and in sheet form as a base for partial dentures. Its elasticity is little less than that of platinized gold, while its cost is about one-third that of gold.

Its many valuable properties render it a most useful find serviceable material, and I now use it almost to the exclusion of other metals in the construction of all parts of regulating appliances.

Rubber or vulcanite plates serve an admirable purpose in expanding the arch and in producing many simple movements of teeth, but the necessity for removing them at times for cleansing often tempts the patients to remove them when they should not be removed, and thus our results are frequently delayed and sometimes greatly interfered with. It is best not to confine one's self to any single system or method in regulating, but to use such parts of any method or to devise such appliance as seems best adapted for the case in hand.

In regard to retaining devices, I think that in nearly all cases they should be of such character as to be non-removable, for in fixtures serve their purpose best when cemented to the teeth and left there for a period of not less than six month. Appliances attached to teeth by means of bands or clasps will after a long time cause injury to the teeth, but when cemented in place no injury will result.

PRODUCTS OF GAS MANUFACTURE.

When a ton of coal is carbonised the following products with their quantities are obtained : Gas, 10,000 cubic feet ; tar, 10 gallons ; ammoniacal liquor, from 25 to 30 gallons ; residnal coke, 12¾ cwts. In these products no less than 44 distinct hydro-carbons belonging to all the known series have been recognised : 7 distinct phenols, including 3 acids, acetone, and water : 21 nitrogen compounds, including ammonia and aniline ; 9 sulphur compounds, including sulphuretted hydrogen and thiophen ; besides hydrogen, nitrogen, and carbon. It is, therefore, evident that the process of destructive distillation of a complex substance like coal is far from simple ; indeed in spite of the great number of products enumerated above, almost every day new members are being added.

Broadly, the by-products of commercial value are the ammoniacal liquor and the tar. The liquor is almost always employed in the manufacture of sulphate of ammonia, which is valuable for agricultural purposes. The total quantity produced in this country in 1886 was about 100,000 lb., 70,000 of which were exported. Coal tar is worth about 7s. a ton, some 700,000 tons being produced in the same year, this quantity being capable of yielding 3,000,000 gallons of benzene. From coal tar are obtained by distillation the following valuable bodies : benzene, toluene, naphtha, carbolic acid, creasote, anthracene, naphthalene, and a residue of pitch ; the benzene and toluene yield aniline, whence the dyes magenta and methyl violet are obtained ; the phenol and creasote form the basis of valuable antiseptic and disinfectant preparations, and the first-named is also the source of the dye aurin ; naphtha is valuable chiefly as a rubber solvent ; naphthalene yields naphthylamine, a beta-naphthol, vermillene scarlet, and naphthol yellow ; anthracene gives on treatment alizarin, from which a great number of beautiful dyes are prepared. By itself, also, coal tar has many applications, as, for instance, for making gas, as fuel, and as a preservative for building materials. Then should be mentioned the legion of coal-tar derivatives, which form a most valuable and important list of remedies in the *materia medica*. Thus many of the antipyretics, hypnotics, narcotics, disinfectants, and antiseptics which the chemist has placed at the disposal of the physician are derived from coal tar. Antipyrin, antifibrin, analgen, exalgine, salol, saccharin, and salycilic acid occur to us as examples. Indeed, in face of the impetus which the introduction of coal tar derivatives in therapeutics has given to medicine, and in view also of the value of the ammonia produced as a fertilising material, it is difficult to say which of the products of coal distillation are of the greatest value, and which may be regarded as the direct, and which the by-products, for it is evident that the tar and liquor are as useful as, if not more so than, the gas itself, the manufacture of which has led to an industry of an importance which could never have been foreseen. Persons talk of the probable decline of the gas industry, but it does not generally occur to them that if the supply of by-products of the gas-maker were stopped, the result would probably prove infinitely more serious than the mere discontinuation of the supply of gas.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents]

ARGYLL LODGE,
BELMONT ROAD, SCARBOROUGH.

To the Editor of the " DENTAL RECORD."

Sir,—The letter in your November issue renders it necessary that I should again ask your indulgence to allow me to encroach upon your valuable space. Mr. Whittington states in that letter that the sentence in inverted commas, which he pretended to quote from my pamphlet, appears in it upon page 22. Neither in the chapter and verse that he gives, nor indeed upon any other page, can the sentence be found. With regard to the other question, anyone who read my previous letter will remember the point upon which I corrected Mr. Whittington was as to whether Mr. Braine used the right hand in applying the facepiece, and not as to where he stood, as one would infer from Mr. Whittington's letter.

I am, Sir, your obedient servant,

Nov. 21*st*, 1893. T. E. CONSTANT.

312, St. Vincent Street, Glasgow,
November 21st, 1893.

To the Editor of the "Dental Record."

Dear Sir,

As the accompanying is only forwarded and intended for the benefit of the Medical and Dental professions generally, and as I have no wish to see the General Medical Council into litigation, it will be a favor if you give it a place in your next issue.

Yours truly,
THOS. F. TRACY, P.H.D., &c.

P.S.—I not being a member of the British Dental Association, I expect you will not insert the enclosures, and as editors of the Medical Journals inform me you are the proper medium for this communication, I take this opportunity of getting a refusal so that I and those opposed to W. Blandy will be able to say that it was refused, and thus show the current spleen, and copies of these will be transmitted to the various Medical Journals. T.F.T.

Enclosures.

General Medical Councils Proceedings and Dental Act, 1878.

Sir,—Mr. Blandy, the pioneer of the unconstitutional body calling itself "The British Dental Association" appears to have no mean opinion of himself, and those who follow him in regard to advertising, &c., &c., indeed so much is this the case that they assume to be supreme rather than the Crown and the Legislature, by imposing on the General Medical Council to do what is beyond its powers because unauthorised by this Act, that Act being made for the General Council and not them for it, and they are bound to obey it. It is unfortunate that Mr. Blandy and his friends should assume such an apparent serious desire for the attainment of their objects without acquainting themselves whether power is delegated to the General Medical Council to grant the prayer of their petition or memorial or not, because if the Council presumed to do what was beyond its power, then not only was their act null, but anyone against whom anything was done on the supposed authority of the order or resolution could without difficulty get it set aside, and those members of the General Medical Council who presumed to impugn the authority of statute did so only as individuals, and as such they rendered themselves responsible for the consequences and had no redress from the funds under this or any other Act. A careful perusal of the Act can lead to no other conclusion than that Mr. Blandy and his friends are pressing for a result which they can never attain because illegal. There has been so much valuable time spent, and so much said and written by Mr. Blandy and others for the attainment of their desire, that several dentists in this quarter were forced into studying and re-studying the Act again with an anxious desire to satisfy themselves as to its meaning in every respect so that they might thoroughly know and understand it in every particular, and ultimately the opinion of an eminent Scottish legal gentleman was obtained on the various points to which reference is made therein, and which accords with the only opinion at which those dentists had arrived. The opinion, a copy of which is sent herewith, deals with many matters applicable alike to the Council, and all duly registered dentists, and it will be a favor if you will publish it in whole or in part or deal otherwise with it as you think proper as well as this letter. What has been done by those dentists to whom I have referred has been prompted with a desire alone that they and all others should only act constitutionally, and that the registered dentists should be protected against unconstitutional orders or regulations of the Medical or other Councils, while endeavouring if possible to obtain their statutory rights but which in the past has been denied to them by the General Medical Council diverting the dentists funds to purposes other than those enacted by statute.

Yours truly,

Opinion of Council on the Dentists' Act, 1878, and the powers conferred under it on the General Medical Council, London, or other Medical authority.

By section 38 of the Dentists Act, 1878, it is enacted that—" All bye-laws, orders and regulations made by the General Council or by any Medical authority under the authority of this Act shall be made and may be from time to time altered or revoked in such manner and subject to the approval (if any) as in the case of other bye-laws, orders or regulations made by such Medical authority."

In dealing with the above enactments it is only necessary to discover what bye-laws, orders and regulations can be made either "by the General Council or by any Medical authority *under the authority of this Act.*"

There being such authority under the Act let them be taken in their order as they occur in the Act.

By Section 11, 2, 5, and 6, power is given to the General Medical Council therein mentioned to make orders, but these are limited to the Register. On "the General Medical Council from time to time to make alter and revoke such orders and regulations as they see fit *for regulating the general register and the local register and the practice of registration under this Act and the fees to be paid in respect thereof.*"

Section 15 confers power on the General Council to make regulations to regulate the summoning of meetings, and doing the various other matters connected with these thereby authorised regarding their own proceedings, but these powers are limited to these meetings.

Section 20 enacts that such reasonable fees shall be paid for the certificates to be granted under the authority of this Act by the various colleges, the faculty and universities therein mentioned, as their respective councils or other governing body may from time to time by bye-laws or regulations respectively direct.

Section 32 enacts that moneys arising from fees paid for registration and otherwise received by the General Council are to be applied in accordance with regulations as may be from time to time made by the General Council *in defraying the expenses of registration and the other expenses of the execution of this Act, and subject thereto towards the support of Museums, &c.*

This enactment confers no right to apply any of said revenue or income in payment of fees to members of the councils for attendance or travelling expenses, and no higher authority can for this dictum than the enactment in Section 12 of the Medical Act, 1858, which provides "there shall be paid to the members of the council such fees for attendance and such reasonable travelling expenses as shall from time to time be allowed, by the General Council and approved by the Commissioners of Her Majesty's Treasury."

The said revenue or income under the Dentists' Act, 1878, being thus freed from even contributing towards payment of said fees and travelling expenses, a large surplus should remain annually for Museums and the purposes mentioned in Section 32 of the Dentists Act, but to neither of these purposes has any such surplus been applied. No doubt the application of the income or revenue is to be in accordance with such regulations as may be made to the limited purpose of "defraying the expenses of registration and the other expenses of the execution of this Act." Have such regulations been made from time to time?

Section 37 makes it lawful by special order to dispense with the certificates and examinations therein mentioned.

Beyond what has been pointed out neither the 38th section of the Dentists' Act, 1878, nor any other Act confers powers on the General Council to make either a bye-law, order or regulation, for any purpose whatever in reference to it.

The General Council of itself has no power under the 13th section of the Dentists' Act to do any act except what is first thereby enacted, viz.:—" to erase " from the Dentists' Register any entry which has been incorrectly or fraudulently made. The section provides for persons registered in the Dentists' Register who have been convicted of felony, or a misdemeanor, or of infamous or disgraceful conduct in a professional respect, having their names erased from the register, but that can only be done subject to the controlling enactments in that section:—viz., that " the General Council may and upon the application of any of the medical authorities shall cause enquiry to be made into the case of a person alleged to be liable to have his name erased under this section "—(that is a person who has been convicted of a felony or misdemeanor, or been guilty (convicted) of any infamous or disgraceful conduct in a professional respect)—and on proof of such conviction, or of such infamous or disgraceful conduct shall cause the name to be erased, and also " that the name of a person shall not be erased under this section . . . . an account of a conviction for an offence which, though within the provisions of this section does not either from the trivial nature of the offence or from the circumstances under which it was committed disqualify a person for practising Dentistry." It is thus evident that *ex proprio motu* the General Council cannot erase any persons name from the Dentists' Register until it has caused enquiry to be made into the case of a person alleged to have his name erased under the 13th section, and until proof is obtained of a conviction under their enquiry of guilt of one or other or all of the offences mentioned therein, and even then the power to erase the name cannot be exercised by the council " on account of a conviction for an offence which though within the provisions of that section does not either from the trivial nature of the offence or from the circumstances under which it was committed disqualify a person from practising Dentistry." These enactments place the council in the position of a dove deprived of the use of its wings attempting to fly, and confirmation will be found on a reference to Section 29 of the Medical Act, 1858, which enacts—" If any registered Medical practitioner shall be convicted in England or Ireland of any felony or misdemeanor, or in Scotland of any crime or offence *or shall after due enquiry be judged by the General Council to have been guilty of infamous conduct in any professional respect the General Council may if it see fit direct the Registrar to erase the name of such Medical practitioner from the Register.*" The section prohibits the General Council from exercising any power until after conviction in regard to the various crimes therein mentioned, but it differs essentially from Section 13 of the Dentists' Act in so far as it constitutes the General Council judges of what is "infamous conduct in any professional respect," and that it can arrive at its determination by what method soever it thinks proper whereas under said section of the Dentists' Act there must be proof of such conviction, or of "such infamous or disgraceful conduct," and as the proof necessary to obtain a conviction cannot be taken by the General Council, and that there is no machinery in the Act for rebutting evidence being taken, it is apparent that both must be established by judicial proceedings, and in addition there are the controlling enactments to which reference has been made. Then beyond the fair and ordinary meaning of the words "infamous and disgraceful conduct in a professional respect." Neither the council nor a court of law or any individual can go, because neither of the statutes attaches to them any other meaning, and no stretch of imagination can apply the words "infamous and disgraceful," and then application must be two-fold, to any advertisement or other intimation by a Dentist which limits itself to his name that he is a Dentist, his address and his charges for performing certain dental operations, or operations on or connected with the teeth of a human being, of course the Act does not apply to, and the General Council have no power or control over any person whether in right under it to use the designation "Dentist" or not, who merely furnishes artificial teeth placed mechanically in a case, frame, or otherwise fitted or to be so in the mouth so as to supply the place of natural teeth which have been removed by operation or otherwise, because that person is not in any sense anything more than a mechanic.

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